K. M. Waage

doc. 519

1 of 2

Drill hole logs ——— Book I, Holes 1 to 26.

U.S.B.M. Project #823

Castleman Basin, Maryland.

Re clays (Holes 1 to 3 inclusive emended from logs of T.W. Amsden. Some clays rechecked. T.W.A. did not separate hard and soft clays and rarely separated silty clays from non-silty. Not all clays in holes 1 to 3 were rechecked for these 2 characteristics. All clays in T.W.A's parts of logs for holes 4 & 5 were checked and emended where necessary)

36	134
37	138
38	141
39	
40	147

U.S.B.M. Project 823 – Castleman basin, Md.

	T.D.	Page
Drill hole logs		
Hole #1		1
Hole #2		6
Hole #3		12
Hole #4		17
Hole #5		23
Hole #6		29
Hole #7		34
Hole #8		38
Hole #9		43
Hole #10		46
Hole #11		49
Hole #12		52
Hole #13		56
Hole #14		59
Hole #15		63
Hole #16		65
Hole #17		69
Hole #18		74
Hole #19		77
Hole #20		81
Hole #21		83
Hole #22		89
Hole #23		92
Hole #24		95
Hole #25		98
Hole #26		102
27		105
28		109
29		112
30		116
31		118
32		123
33		127
34		129
35		132

Hole #1 CB

El. 2600

0 to 11	Surficial material
22	Buff (weathered) medium grained sandstone
38-5	Gray clay with limey pellets, greenish in lower 2'.
45-5	Greenish gray silty clay with siltstone lenses
52-6	Fine to medium sandstone
55-4	Silty gray clay with pellets darker clay
57	Red and gray clay
78-6	Greenish gray silty clay + claystone with interbedded siltstone in lower 10 ft. Calcareous stringers thruout
93-10	Interbedded siltstone and fine sandstone
95-2½	Coal bone + shale
100	Dark, gray, dense, argillaceous limestone with minute limey pellets. (and possibly some ostracods) Pyritiferous (in stringers)
105	Gray clay with limey pellets; stringers of pyrite and calcite.
107-5	Gray medium grained sandstone
109	Interbedded greenish gray claystone and gray siltstone.
115-6	Dark greenish-gray clay, carbonaceous matter and calcite stringers.
117	Carbonaceous clay
117-6	Dark gray argillaceous limestone
136-1	Black shale. interbedded siltstone in basal 3', plant remains
136-10	Coal BARTON
150	Dark gray argillaceous limestone and calcareous clay (CB11)
175-6	Dark gray silty clay, limey pellets and stringers
180	Interbedded greenish gray siltstone and silty clay, minor fine sandstone.
184	Light gray micaceous sandstone
193	Dark gray silty clay, limey pellets
207	Interbedded greenish gray claystone and gray siltstone, calcareous stringers.

226	Greenish gray siltstone, minor silty claystone.
236-6	Light gray medium to fine-grained sandstone minor silty beds.
252-6	Interbedded dark gray to carbonaceous siltstone and silty claystone, plant fragments.
256	Medium grained sandstone, minor silty zones.
259-6	Black shale, calcite veinlets, limey nodules
260-6	Coal HARLEM
262	Black shale. (some small fossils – check to see if marine) This interval should be over coal, one unsplit
278-5	Gray limey clay and argillaceous limestone
282-5	Greenish clay, mottled red, with limey pellets
284-5	Red and green clay. (CB12)
288-5	Greenish gray claystone and silty claystone (CB13)
296-6	Greenish gray claystone, limey stringers
304-6	Mottled red and green clay
312-6	Gray to greenish silty claystone, limey stringers
332	Greenish gray micaceous siltstone with interbedded gray sandstone lower 10 ft.
333-2	Carbonaceous clay.
338-3	Coal, shale + bone UPPER BAKERSTOWN
346	Calcareous clay and claystone, dark gray.
356	Gray silty tough shaley clay, limey stringers top 5 ft. Lower part almost claystone (CB14)
360	Interbedded siltstone, sandstone and clay.
370-5½	Dark gray to black shale, shaley siltstone in upper part.
372	Coal LOWER BAKERSTOWN
377	Dark gray silty clay, limey pellets (CB15)
382	Greenish gray mottled silty clay
388	Fine grained gray sandstone, intercalated claystone in lower part.
393	Interbedded siltstone, sandstone and claystone.
398	Greenish gray silty clay
409	Red clay mottled with green
417	Interbedded greenish siltstone + claystone, some sandy zones.

420-6	Green clay
435	Red silty clay, green streaks
436-8	Greenish gray silty clay, some carbonaceous matter.
455	Fine grained gray sandstone becoming silty downward
478	Interbedded greenish gray siltstone and silty claystone.
487-8	Carbonaceous siltstone and silty shale. with marine fossils
488-9	Coal BRUSH CREEK
491	Dark gray silty clay
498	Medium to fine grained light gray sandstone some intercalated siltstone
499-6	Dark gray silty clay
508	Dark gray silty clay with limey pellets
511	Light gray silty clay
519-6	Interbedded siltstone and sandstone
530	Green silty clay and claystone. Fragmental from 526-6 to 528 (CB 16)
539-6	Green silty clay and claystone, red mottling top and bottom.
549	Green silty clay, calcite veinlets
554	Fine grained gray micaceous sandstone with intercalated siltstone and claystone.
559	Coarse grained gray sandstone scattered pebbles (to 3mm diam)
563-6	Dark green to gray clay
565	Gray sandstone, intercalated siltstone + claystone
570-6	Dark green silty clay
572	Carbonaceous clay
575	Dark gray silty clay, sandy streaks
575-6	Carbonaceous clay, coaly streaks
592	Dark gray silty clay
594	Mottled gray semi-plastic to semi-flint clay, locally fragmental (Anal #1) (CB 17A) Irony in lower part. (CB 17B)
595	Carbonaceous clay.

616-6	Interbedded light gray sandstone and siltstone.
620-6	Medium grained quartzitic sandstone
622	Dark gray siltstone and sandstone
625	Medium grained quartzitic sandstone silty partings.
629	Interbedded dark gray siltstone and sandstone
645	Coarse gray quartzitic sandstone, shale fragments and some stylolites.
648	Dark gray to carbonaceous siltstone, sandy streaks, plant fragments
680	Fine to medium grained sandstone, stylolites, local zone coarse grained 674-676.
726	Medium to coarse. grained sandstone, stylolites, zones of coaly partings 683 to 683-6, 694-6 to 695-6.
736	Interbedded light gray sandstone and darker siltstone
743-7	Medium grained gray sandstone, siltstone partings.
744-1	Coal + boney coal
749-7	Black silty carb clay, plant remains
750-6	Coal + boney coal
758-6	Interbedded gray sandstone and siltstone coaly streaks and partings
761-8	Dark gray shale, plant fragments
762-11	Coal + boney coal
765-6	Dark gray silty clay and fragmental claystone, locally carbonaceous, flinty. (C1318.)
770	Interbedded sandstone + siltstone, minor shale
789	Fine to medium grained quartzitic sandstone, stylolites
818-9	Medium to coarse grained quartzitic sandstone, stylolites, coaly zone 811 to 813-6
822-9	Interbedded siltstone, shale + fine sandstone
826-3	Coal, shale + bone
838-2	Black shale, sandy streaks at top, plant remains
838-8	Coal

851-6 869	Dark gray silty to sandy clay Fine grained sandstone intercalated siltstone + silty claystone. Stylolites at base Bottomed 869
Notes on Clays	① Mottled gray fragmental semiplastic-semiflint from 592 to 594 is about at Upper Freeport horizon. Sent for test to see if its type was good grade. ~~No commercial bodies can be expected at this horizon.~~ (Anal. #1) ② Note - Lower Bakerstown underclay with obvious impurities in this hole. ③ Mahoning horizon represented by fragmental clay at 527± (CB16)

Hole #2CB

El. 2474

0 to 34	Surficial material
35-11	Carbonaceous sandstone - poor recovery
37-2	Poor recovery - carb. shale + coal
45	Dark gray micaceous siltstone
56-6	Gray silty clay
63-9	Dark gray siltstone, carb. partings, plant remains.
67-5	Interbedded siltstone + fine sandstone, some shale, plant fragments in lower part
71-9	Dark gray shale some siltstone.
73-9	Coal
77-3	Dark gray shale, siltstone + sandstone layers, plant fragments.
83	Interbedded dark shale and siltstone
87-8	Carbonaceous shale
88-6	Coal BARTON
96-9	Calcareous clay and claystone, some argillaceous limestone
100-9	Gray clay with limestone pellets
102-9	Gray calcareous clay.
104	Gray clay with limestone pellets.
106	Mottled gray + greenish argillaceous limestone
117-6	Grey, locally shaley, claystone with limey stringers
119-6	Grey siltstone, some claystone
126	Greenish gray shale (clayey)
143	Interbedded siltstone and shale, sandy zones
144	Carbonaceous shale, pyritic
145-7	Coal FEDERAL HILL
180-6	Coarse to conglomeratic sandstone, few stylolites.
181-6	Dark gray siltstone
184	Coarse sandstone, shale partings
188	Dark gray shaly claystone
206	Black shale, marine fossils (Ames)
207-10	Coal HARLEM
215	Calcareous bastard clay and calc. claystone
218	Dense gray argillaceous limestone, pyritic
227	Calcareous clay and calc. claystone

233-7	Greenish gray slightly calcareous clay.
236-9	Red and green (mottled) clay
238-6	Carbonaceous shale
247	Red calcareous clay
255-9	Red and green calcareous clay
260	Dark gray silty clay, calcareous stringers in lower 3'
272-6	Interbedded green claystone, + siltstone + sandstone.
275-6	Green clay, calcareous stringers
276-6	Carbonaceous clay.
286	Fine grained sandstone, intercalated siltstone and green claystone
288-10	Dark gray fragmental claystone
291-3½	Coal UPPER BAKERSTOWN
304	Calcareous clay and claystone minor argillaceous limestone.
313	Dark gray silty clay
323-9	Interbedded siltstone and claystone minor fine sandstone.
325-11	Carbonaceous silty clay
327-10	Coal LOWER BAKERSTOWN
335	Dark gray silty bastard clay.
345	Interbedded claystone, siltstone and sandstone
354	Dark to light gray and greenish clay, calcareous stringers in lower part.
357	Mottled red and green clay. (CB21)
373	Interbedded sandstone, siltstone + claystone.
377-1	Green silty clay
391	Interbedded siltstone and green clay.
393-6	Dark gray clay
395	Dense gray argillaceous limestone
398	Light gray clay
402	Green clay calcite stringers
413	Medium grained sandstone
423-6	Interbedded sandstone, siltstone and shale
434-6	Dark greenish silty to sandy claystone

	shaley,
438	Dark gray silty claystone, plant remains
456-7	Black shaley siltstone with marine fossils (Brush Creek)
458	Coal + bone BRUSH CREEK
460-5	Dark grey fine grained sandstone
464	Gray medium grained sandstone, x bedded, shale partings
467-6	Dark gray silty clay
469-6	Calcareous gray clay with limey pellets
474-6	Gray slightly silty clay
477	Gray finegrained sandstone lenses of claystone and siltstone
485-6	Silty gray clay
492-10	Gray claystone and semi-hard silty clay with sandy zones.
494	Green clay
496	Gray clay
514-6	Shaly green claystone
515-6	Dark gray silty clay and claystone
526-6	Gray bastard clay
528-6	Gray siltstone
530	Fine micaceous sandstone
531-6	Greenish gray clay, calcite stringers
532-6	Greenish gray fragmental claystone (CB22)
547	Greenish gray silty clay, sandy streaks and calcareous stringers.
548	Grey to black claystone
552-10	Interbedded siltstone, sandstone + claystone
559-11½	Black micaceous shale
560-10½	Coal FREEPORT RIDER
563	Carbonaceous shale, coal partings
565-9	Interbedded fine sandstone + siltstone
568-6	Carbonaceous shale
571-4½	Coal UPPER FREEPORT
574-6	Carbonaceous shale with lenses argillaceous limestone. Plant fragments
584-6	Gray dense argillaceous limestone.

591-6	Gray silty semiplastic clay grading downward to fragmental claystone with minor semi-flint. (CB 23A)
597	Fragmental claystone. Light brown fragments of claystone and vein-like masses of soapy flint clay in matrix of sideritic material (CB 23B)
599-6	Gray silty clay
619-6	Fine grained sandstone, intercalated siltstone
635-9	Coarse to conglomeratic (below 637) sandstone.
637-6	Conglomerate (pebbles to 10mm)
639-6	Interbedded siltstone, sandstone, and conglomerate
645-6	Medium to coarse grained sandstone
646-6	Carbonaceous shale and bone.
649-1	Dark gray siltstone and sandstone, streaks of conglomerate
652-3	Coal UPPER [illegible]
657	Dark gray silty calcareous clay
660	Silty gray clay and claystone, limey stringers
665	Interbedded siltstone, sandstone, claystone
669-6	Silty gray shaly micaceous clay
670	Carbonaceous clay
674	Gray silty clay
675	Carbonaceous silty clay
681-6	Gray silty shaley clay, sandy partings
684	Black micaceous shale
686	Interbedded siltstone and sandstone
688-5	Black shale, plant remains
689-9½	Coal
705-8	Interbedded siltstone, silty claystone, and fine sandstone.
708-2½	Coal & bone
713-2	Dark gray silty clay
717-1	Black shale, scattered sand grains in lower part
717-5	Bone
718-8	Claystone
720-4	Coal and bone
730	Dark gray silty to sandy clay

731-7	Coarse grained sandstone
733-8	Medium grained sandstone
734-8	Sandy bone, coal streaks
734-11	Coal
735-4	Cannel coal
736-6	Dark gray clay, scattered sand grains
743	Dark gray fine grained sandstone
744-7	Black shale
744-11	Dark gray silty clay
750-7	Interbedded siltstone and fine sandstone
756-6	Medium grained sandstone, micaceous partings
762-10	Gray clay shale, micaceous, some sandy and silty partings.
765-6	Sideritic claystone (CB24)
766-10	Black shale
767-11½	Coal and bone
770-5½	Shale with sandy partings
770-10½	Coal
776	Gray sandy clay
787	Interbedded siltstone, sandstone + silty claystone,
810	Medium to fine grained sandstone, shaly partings
820	Dark gray micaceous siltstone + intercalated fine sandstone.
842	Medium grained quartzitic sandstone, stylolitus
845-6	Irregularly interbedded siltstone and sandstone.
853-8	Fine grained quartzitic sandstone, silty layers and stylolites
857-6	Carbonaceous bastard clay
858-6	Siderite concretions
887	Medium to coarse grained stylolitic sandstone
890-2	Black shale, micaceous
891-7½	Coal and shale
894-1	Black shale
894-6	Coal
896-9	Black shale
904-6	Dark gray silt stone, some fine sandstone.
907-6	Irregularly interbedded siltstone and sandstone.

922-9	Coarse grained sandstone, coal partings at 921-9
940-10	Black micaceous siltstone, some sand and silty claystone, few plant fragments
948	Light gray silty clay
975-10	Dark gray to black micaceous siltstone, some sandy partings. Zone coaly streaks 962-964. Plant remains.
976-2	Coal
987	Black micaceous siltstone, sandstone partings
990-5	Gray clay
993-6	Black shale with coal seams (to 4")
997	Black micaceous siltstone, sandstone partings
1012-6	Coarse conglomeratic sandstone
1020	Dark greenish gray silty clay, inclusions buff colored clay
1025	Greenish gray clay irregularly intercalated sandstone
1028	Green clay with buff inclusions
1031	Medium grained sandstone, green clay partings
1039	Silty to sandy green clay, red mottling
1045	Red micaceous clay, minor green mottling.

Bottomed at 1045

Clays. ① No clays sampled for analysis. Solivar zone shows thick hard clay but chiefly fragmental claystone with interstitial siderite.

Pottsville - Mauch Chunk contact 1012-6

Hole #3 CB Elev. 2580

0 to 16-9	Surficial material
26	Fine-grained sandstone
41	Medium- " sandstone, silty lenses, light gray on fresh surfaces
41-6	Conglomerate (Qtz. pebbles to 5mm)
48-6	Hard, blue-gray limestone.
56-6	Interbedded fine sandstone and siltstone and silty claystone
57-6	Gray argillaceous limestone, clay? pellets.
61-6	Gray medium sandstone, carb partings
66-6	Interbedded siltstone and claystone
69-6	Dark gray silty claystone. locally sandy.
70-6	Hard gray limestone with clay pellets.
73	Gray to black, silty to sandy shale
78-6	Dark gray to black micaceous clay
80	Interbedded siltstone, sandstone + claystone
83-6	Dark gray to black shale, locally carbon-aceous, some silty zones.
89	Interbedded siltstone, sandstone, + claystone
90-3	Silty carbonaceous shale, plant frags.
91	Coal + bone EARTON
102	Limey gray clay and claystone with limestone pellets.
117-6	Gray, green-gray and green semi-plastic clay becoming silty downward, calcareous stringers and veinlets present
136	Light gray siltstone
140-2	Green and red semi-plastic clay, calcareous stringers.
149-4	Green silty clay, calcareous stringers
152-6	Red and green semi-plastic clay
158	Interbedded fine sandstone, siltstone and silty claystone.
159-6	Dark gray shale
179	Fine silty sandstone, light gray, irregularly bedded, becoming sandy siltstone downward

182	Dark gray siltstone, sandy partings:
211-	Dark gray to black fossiliferous (AMES MARINE ZONE) shale, scattered calcareous nodules
212-7½	Coal HARLEM
213-9½	Carbonaceous shale
233	Calcareous clay and claystone, gray to green-gray, with limestone nodules thruout. (up to ½ in. diam.)
245	Greenish gray slightly silty clay, some dark (carbonaceous?) mottlings.
254	Interbedded, siltstone, sandstone, and silty greenish clay.
275-6	Greenish-gray silty clay grading downward into clayey siltstone, calcareous stringers in lower 20 feet.
283	Interbedded siltstone, sandstone, and sitty clay.
293-6	Fine quartzitic sandstone, some interbedded siltstone and claystone.
296	Light gray bastard clay, carbonaceous zones and sandy streaks. (Up. Bakerstown underclay?)
297	Dense gray (pale) limestone
300-6	Dark gray silty clay
307	Calcareous claystone with limestone pellets.
308	Light and dark gray fragmental semi-flint and claystone. (CB31)
315	Dark gray shaley, somewhat silty clay.
322-6	Interbedded siltstone, sandstone + sitty clay.
338-10	Dark gray to black micaceous siltstone, sandy streaks.
340-8	Coal + bone LOWER BAKERSTOWN
342-6	Dark gray bastard clay
347-10	Dark gray argillaceous limestone and limey claystone with light colored limestone pellets.

355-10	Gray semi-plastic clay, dark mottling (CB32 ANAL 2)
358-6	Red and green semi-plastic clay
361-6	Green silty clay
364	Interbedded siltstone, sandstone + silty clay.
366	Green silty clay, red streaks.
373-6	Interbedded fine sandstone, siltstone, silty clay.
382-6	Red micaceous shale, green mottling.
392	Mottled red and green silty clay, with scattered limey pellets (to ½" diam)
397-6	Green-gray slay, dark gray mottling.
444-6	Fine to medium grained gray sandstone with many zones of interbedded, irregularly bedded siltstone and shale.
446-6	Black pyritiferous shale. (Brush Cr.?)
450-6	Dark gray sandy siltstone
454	Irregularly bedded sandstone + siltstone claystone.
458	Dark gray silty clay
461-1	Greenish gray clay with limey nodules (up to 2" diam)
470	Greenish gray silty clay
473-7	Greenish gray and red silty clay
483-7	Green silty clay with sandy partings
489-6	Greenish gray and red silty clay.
490-8	Gray fragmental claystone. (CB33)
499-6	Greenish gray silty clay
507	Red and green semiplastic clay
515	Green silty clay, sandy at base
520-6	Coarse gray micaceous sandstone
523-10	Gray silty clay
528	Light gray micaceous siltstone
542-6	Dark gray silty clay (CB34)
552-6	Fragmental claystone, silty + pyritiferous
560-4	Gray claystone

683-3	Gray medium grained sandstone, some coarse zones and one bed conglomeratic 680-6 to 683-3. Stylolites 620 to 660. Some siltstone partings.
684-8	Gray carbonaceous clayey sandstone.
685	Coal
686-6	Gray bastard clay
699	Gray siltstone with sandstone lenses.
709-8	Carbonaceous silty clay with interbedded thin sandstone beds (<1") fragmental plant remains.
712-8	Black micaceous shale
713-6	Coal
716	Black shale, sandy partings, carbonaceous at base
732-6	Interbedded gray micaceous siltstone and sandstone. All thinbedded. Plants Carbonaceous claystone at base.
734-9	Coal ("fide" driller - no core)
735-3	Gray bastard clay,
737-6	Silty to sandy fragmental claystone (CB35)
740-6	Gray silty to sandy clay
767	Gray, medium grained sandstone, quartzitic and stylolitic, some coarse zones in basal 8 ft.
788-6	Coarse, conglomeratic sandstone, stylolitic
790-6	Fine sandstone, coaly streaks
792-4	Carbonaceous shale, coaly partings, some thin lenses coarse sand.
793	Fragmental claystone
798-3	Coal, shale and bone:-
	793-9½ bonea boney coal
	794-2 shale
	794-5½ coal
	795-2½ shale
	796-11½ coal, bone, shale partings
	798-3 coal-shale + bone.

clay,

802-4 Fragmental semiplastic to semiflint, shades of gray. Pyritiferous, locally carbonaceous (CB36)

804-2 Brownish fragmental flint and semiflint, (good except for pyrite) pyrite nodules and coatings on shear planes. (A. #3) (CB37)

806 Black, carb. shale.

812 Medium grained quartzitic sandstone. stylolitic.

Bottomed 812'

Clays. 1. Lower Bakerstown underclay (part) 348 to 351-6 for analysis & fusion test (#2)

2. Mt. Savage horizon may be that from 798-3 to 804-2. Mahogany fragmental flint and semi flint good except for excessive pyrite. Chiefly a soft (or semi-). flint, only single patch [illegible] between 802-4 & 804-2, Anal. sample #3

Hole #4CB

El. 2660

0 to 10-9	Surficial material
12-9	Weathered (buff) medium grained sandstone
16-5	Poor recovery — gray to black silty shale and some fragments of bone
17-11	Coal (no recovery)
23	Gray silty clay
36	Light gray micaceous siltstone, thin layers of sandstone
38	Gray clay shale, micaceous
38-9	Black shale
46-9	Gray argillaceous limestone + limey claystone
51-9	Medium to fine grained sandstone
71	Medium to coarse grained sandstone
79	Siltstone with interbedded sandstone
85-4	Gray argillaceous limestone
86-4	Black finely silty bastard clay
90-11	Dense gray argillaceous limestone mottled buff
113	Greenish gray clay with irregular lenses of buff-colored limestone
120-9	Gray silty clay few limestone layers (115 to 115-3 and 116-10 to 117-10)
121-3	Coal, bone partings
123-9	Fine sandstone, irregularly bedded, some siltstone streaks.
125-9	Gray to black shale, plant remains
138-6	Dark gray to black silty claystone grading downward to siltstone
142-10	Coarse-grained gray sandstone
153-10	Limey claystone + argillaceous limestone, limestone pellets thruout.
155-10	Dark gray silty clay
159-2	Dense gray limestone
167	Gray, locally silty, claystone with sandy streaks. Considerable Fe as stringers and siderite concretions.

173	Black shaly clay, coaly streaks at top, plant fragments.
190	Interbedded siltstone & silty claystone, sandy streaks.
192-6	Medium to coarse-grained sandstone, one zone siltstone.
196-7	Dark gray shale
197-4	Coal
198	Black pyritic claystone
212	Gray limey claystone with limestone pellets grading to clay with limestone inclusions
226	Gray silty claystone, minor siltstone and shaly claystone.
235-6	Siltstone, interbedded in lower 2'6" with claystone and sandstone
239-6	Medium grained sandstone
246-6	Black shale, coal partings 244-3 to 244-9 and 245-6 to 245-9 FEDERAL HILL
251-6	Gray silty clay, limey (with calcareous stringers and limestone inclusions)
256	Siltstone and silty claystone, sandy streaks
275	Medium grained sandstone
300	Coarse grained sandstone, conglomerate from 284 to 286.
313-4	Black shale, marine fossils, (Ames)
315	Coal HARLEM
341-9	Argillaceous limestone grading downward into claystone with limey stringers
344-7	Dark gray silty clay and claystone
348	Mottled red and gray silty clay
351-6	Dark greenish gray silty claystone some limey stringers
375-6	Gray to greenish claystone with pellets, inclusions and beds of argillaceous limestone
397	Siltstone, minor silty claystone, some inclusions light colored argillaceous limestone.

400	Irregularly interbedded fine sandstone and shale, coaly partings lower 6".
401-7½	Coal + bone 9± ?
416-6	Gray argillaceous limestone and limey claystone, limey pellets thruout.
417	Carbonaceous pyritic clay.
424	Greenish gray silty claystone
438-7½	Shaly gray siltstone and silty shale, plant fragments, lower 2' gray clay shale
440-10½	Coal LOWER BAKERSTOWN
445-10	Gray silty bastard clay
459	Light gray silty claystone
461	Dark gray claystone grading to silty clay
466	Greenish gray silty clay mottled red in lower part.
472	Red and green claystone, minor semi-plastic clay
482-6	Irregularly bedded fine sandstone with interbedded siltstone in lower half.
498-3	Green silty claystone, locally shaly
505-6	Gray to greenish claystone, limestone inclusions.
510-6	Gray to green semi-plastic clay grading to claystone, limey stringers thruout.
528	Interbedded siltstone and fine sandstone, silty claystone top 2 feet.
544-4	Siltstone and silty claystone grading to shaly claystone.
563-6	Dark gray to black shaly claystone, marine fossils (Brush Creek)
564-10	Coal BRUSH CREEK
572-3	Interbedded siltstone and fine sandstone, limey inclusions in lower 1 foot
574-8	Silty claystone
581	Limey claystone, limestone pellets, 8" argillaceous limestone at top
595-10	Dark to light gray silty semiplastic clay

592-5	Fine grained sandstone
603-8	Silty to sandy fragmental claystone, gray to greenish, (upper 5 ft silty claystone limey at base)
615	Dark gray-green and maroon silty semiplastic clay
619-6	Silty gray claystone, limestone stringers & inclusions
627-4	Gray siltstone, zones of fine sandstone
632	Dark gray claystone, locally finely fragmental.
638	Red and green silty claystone
640	Green silty claystone zones fragmental claystone + semi-flint clay at top & base
641-6	Gray silty claystone grading to siltstone
661-6	Interbedded shaly siltstone and silty claystone, zones of fine sandstone.
669-4	Shaly claystone grading to carbonaceous shale, silty in upper 2 ft.
670-3	Coal (Freeport rider)
673-3	Carbonaceous clay and shale, coal partings.
676	Irregularly interbedded siltstone and fine sandstone grading to silty shale. Plant remains.
678-10	Coal UPPER FREEPORT
686	Silty claystone
	Limey claystone + claystone, irregular lenses of argillaceous limestone
688-5	Brownish claystone, basal foot fragmental. (CB-47)
694	Silty claystone
695-9	Siltstone and fine sandstone
697-3	Claystone and semi-flint clay (CB-48)
699-1	Silty claystone. large siderite concretion in upper half.
702-10	Dark brown-gray semi-flint clay and fragmental flint clay, minor claystone. 6 inches semiplastic clay at base. (CB49, CB410, CB411, and Analyses #4 and #5)

717-4	Interbedded siltstone and fine sandstone
743-6	Medium to coarse grained, locally conglomeratic sandstone, coaly streaks lower 3 feet.
746-2	Fragmental siltstone, fine sandstone matrix.
754	Irregularly interbedded siltstone and fine sandstone
754-4	Coal U.K
760-4	Gray, calcareous, silty claystone, plant remains in upper foot
775-3	Interbedded fine sandstone and siltstone
789-8	Interbedded shaly claystone and siltstone. (Zone of siderite concretion + flint clay 776-10 to 777-4. Zone black shale 783 to 783-6)
792	Medium grained sandstone
797-5	Shaly claystone grading to clay shale, locally silty with siderite pellets in upper half.
799-2	Coal
800-8	Dark gray to carbonaceous siltstone, minor sandstone, coaly partings.
806-10	Carbonaceous shale grading to gray shale plant fragments thruout.
809-4	Coal
816-4	Silty gray claystone, (shaly with minor silt in lower 1½ ft. - CB 412
823-9	Dark gray silty claystone becoming shaly downward, (9 inches carb. shale at base.)
824-3	Coaly shale
825-9	Silty claystone grading to siltstone
848-6	Medium to coarse grained cross bedded sandstone, locally quartzitic-stylolitic.
858-1	Coarse grained to conglomeratic quartzitic sandstone.
864-6	Fine and medium grained sandstone carbonaceous partings.
867-6	Dark gray silty claystone and siltstone.

868	Carbonaceous shale, pyritic
869	Coal
869-9	Semihard to semiflint clay, pyritic, silty in lower part. (CB413)
873-6	Siltstone, clayey in upper half.
880	Fine to medium grained sandstone.
886-4	Gray shaly siltstone scattered zones of siderite pellets, (4" zone concentrated siderite pellets at base - (CB414)
888-4	Gray clay shale
888-10	Coaly shale, minor bone
890-4	Carbonaceous silty clay and siltstone
891-1	Shaly claystone
891-6	Coal
892-7	Mottled tan semiplastic clay. (CB415) Anal. #6
895	Silty semiplastic clay grading to siltstone
901-7	Gray siltstone
927-4	Interbedded siltstone and fine sandstone.

Bottomed 927-4

Hole #5CB

El. 2521

0 to 20	Surficial material
57	Medium to fine grained sandstone, locally buff-weathered.
61	Dark gray silty and shaly clay (grades into →)
83-5	Black shale, marine fossils (Ames)
85-1	Coal (no recovery) HARLEM
106-9	Gray, pyritic, limey claystone, limestone pellets and clay inclusions (CB51)
114-6	Greenish gray silty clay, dark gray mottling
119-6	Calcareous claystone, minor claystone, limestone pellets and inclusions thruout
124-6	Greenish gray claystone scattered irregular lenses light gray limestone
126-8	Red and green, locally silty clay
128-6	Mottled green and gray silty clay
138	Greenish gray silty claystone + clayey siltstone irregular lenses argillaceous limestone.
147	Greenish gray siltstone, sandy streaks
169-6	Fine to medium grained sandstone
171-6	Silty and sandy claystone, streaks fine sandstone, (dark gray)
172-2	Argillaceous limestone
173-6	Silty gray clay
174	Argillaceous limestone
180-9	Calcareous claystone, limestone pellets, 21" argillaceous limestone at base.
183-6	Silty pyritic clay, limestone inclusions
189	Shaly, silty, gray claystone
190-7	Argillaceous limestone interbedded with silty claystone
202-2	Interbedded dark gray siltstone and fine sandstone plant fragments
203-10	Dark gray shaly claystone
205-11	Coal LOWER BAKERSTOWN
213	Dark to light gray bastard clay becoming increasingly silty downward.

217-5	Gray silty claystone and siltstone
224-11	Medium grained sandstone
228-11	Shaly siltstone, sandy streaks in upper part.
229-8	Gray semi-plastic clay
233-6	Light gray finely silty semi-plastic clay, iron stringers (Siderite?) in lower part
240	Mottled red and green semi-plastic clay grading to claystone
242	Green shaly claystone becomming silty downward.
254	Interbedded siltstone and silty claystone, sandy streaks. Calcareous zone at 247'.
263-3	Red and gray shaly siltstone
269-6	Red and gray claystone and silty claystone, inclusions and zones of argillaceous limestone.
272-5	Silty to sandy shaly claystone.
287-6	Fine grained sandstone. locally calcareous
293	Gray shaly siltstone, lenses fine sandstone
306	Dark gray to black silty shale, minor siltstone, plant fragments
321-3	Dark gray to black silty claystone and shaly clay, marine fossils. (Brush Creek)
322-6	Coal. BRUSH CREEK
325-3	Dark gray siltstone, silty carbonaceous claystone at top.
332	Interbedded siltstone and fine sandstone
337-4	Silty to sandy calcareous claystone, some limestone pellets
344-6	Dark gray claystone grading to silty semi-plastic clay. Limestone pellets thrucot.
349-9	Mottled red and green silty claystone
357-3	Green silty claystone, calcareous stringers
371-2	Interbedded siltstone and fine sandstone
391	Fine to medium grained sandstone.
392-3	Siltstone, becoming clayey downward
394-10	Claystone and minor silty claystone 6" semiplastic clay at base.

413	Silty claystone grading to siltstone, minor fine sandstone in lower part.
416	Shaly claystone, sandy in lower foot.
421-3	Interbedded siltstone and fine sandstone
42?-11	Semi-plastic clay, somewhat silty at base
427-0	Interbedded sandstone and siltstone
~~427-427-9~~	~~COAL = UPPER FREEPORT~~
438-2	Silty claystone
444-10	Interbedded siltstone and fine sandstone
466	Fine sandstone, intercalated siltstone in upper 5 feet.
500-3	Medium grained sandstone
500-10	Coal ~~UPPER KITTANNING~~ L.F.
508-2	Dark gray claystone grading to silty claystone, limestone pellets in lower 3 feet
509-1	Argillaceous limestone
511-10	Light gray limey claystone grading to silty semiplastic clay.
517-9	Silty claystone grading to siltstone
520-8	Irregularly bedded siltstone + sandstone
525-8	Light gray locally shaley silty claystone
525-9	Coal.
527-3	Dark gray claystone grading to silty claystone.
528-3	Irregularly interbedded sandstone and siltstone.
529-9	Silty claystone
530-5	Bone and carbonaceous clay
531-11	Coal
534-11	Gray silty claystone
536-11	Sideritic zone (CB52)
539-9	Finely silty to silty semiplastic clay
549-3	Silty claystone grading to siltstone
582	Interbedded siltstone and fine sandstone
588-7	Black locally carbonaceous silty claystone. Somewhat shaley in lower part.

589-10	COAL
593-3	Interbedded SILTSTONE AND FINE SANDSTONE.
596-11	SILTY CLAYSTONE. PLANT FRAGMENTS.
[illegible]	[illegible]
[illegible]	INTERBEDDED SILTSTONE AND [illegible]
617-3	~~COAL~~
[illegible]	SILTSTONE. [illegible]
[illegible]	SANDSTONE. (CB53)
631-4	FRAGMENTAL DARK [illegible] SILTSTONE AND SILTY CLAYSTONE
639-4	DARK GRAY SILTY CLAYSTONE [illegible]
[illegible]	[illegible]
[illegible]	[illegible] SANDSTONE
662-9	CARBONACEOUS SILTY CLAYSTONE. 1 FOOT OF FINE SANDSTONE AT BASE.
663-1	COAL AND CARBONACEOUS CLAY
665-5	SILTY GRAY SEMI-PLASTIC CLAY
[illegible]	INTERBEDDED SILTSTONE AND FINE SANDSTONE.
[illegible]	DARK GRAY TO [illegible] EOUS CLAY SHALE AND SANDY CLAYSTONE.
[illegible]	COAL
6[illegible]-10	SILTY TO SANDY DARK GRAY CLAYSTONE
[illegible]	COAL, BONE AND SHALE
[illegible]	GRAY SILTY CLAYSTONE.
[illegible]	SHALE SEMI-PLASTIC CLAY, [illegible] UPPER HALF. [illegible] CH-2 TO [illegible]
695-4	GRAY CLAYSTONE
[illegible]	COAL
703-6	OLIVE TO BLACK CLAYSTONE AND SILTY CLAYSTONE. ZONE OF SEMI-PLASTIC CLAY. (CB54)
706	INTERBEDDED SILTSTONE AND FINE SANDSTONE.

768-10	Light gray silty shale.
[illegible]	Silty gray claystone. Zone of concretionary [illegible]
[illegible]	Sandstone [illegible] with claystone at [illegible]
7[illegible]	Silty semi-plastic clay [illegible] to silty claystone.
778-10	Fine sandstone with zones of siltstone
782-[illegible]	Medium grained sandstone.
[illegible]	Gray clay shale. Discrete concretions at top.
[illegible]	Bone, shale and coal.
742-2	Carbonaceous shale and clay. Coal streak.
745-3	Coal
748-5	Slightly silty semi-plastic clay.
753	Silty claystone [illegible] to siltstone
764-10	Fine to medium grained sandstone
765-4	Bone, shale and coal.
771-2	Silty claystone [illegible] siltstone. Discrete [illegible]
[illegible]5-4	Interbedded siltstone and [illegible]
77[illegible]	Siltstone, grading to silty claystone
77[illegible]	Coaly streak
7[illegible]	Gray siltstone. Minor silty claystone and fine sandstone
505-10	Medium grained stylolitic sandstone. Zone of fragmental siltstone and sandstone at base.
525-2	Interbedded siltstone and fine sandstone. Irregular in upper half.
[illegible]	Dark gray shale. Plant fossils.

842-10	Dark gray silty claystone. Plant fossils
842-2	Interbedded siltstone and fine sandstone
843-0	Dark grey silty claystone. Plant fossils
844-11	Bone and coal claystone
847-5	Dark grey silty claystone grading to carbonaceous shale
848-7	Bone and boney shale
850-9	Silty grey semi-plastic clay
851-8	Coal
862-10	Silty claystone grading to siltstone
887-0	Fine to medium sandstone
890-9	Conglomerate
896-10	Fine sandstone. 1 ft of conglomerate at base
897-4	Dark gray silty claystone. Plant fossils
907-7	Coarse to conglomeratic sandstone
915	Olive green silty claystone and siltstone
920	Mottled red and green silty claystone and siltstone

Bottomed at 920' 9/13/47

96-11
96-10
96-2
96-4

Pottsville - Mauch Chunk contact 907-7

Hole #6 CB	El. 2697
0 to 28	Surficial material
35-10	Dark grey to black shaley claystone. Marine fossils.
37-8	Coal HARLEM
57-4	Argillaceous limestone and limey claystone Core loss 7'4"
66-2	Light gray siltstone, Limey stringers and inclusions
77-6	Fine grained iron stained sandstone
	Light gray silty claystone, limey pellets and inclusions, grading to light gray claystone and silty semi-plastic clay.
87-4	Light brown fine grained sandstone 8' 2" core loss.
102-10	Light gray silty claystone, Limey pellets, stringers and inclusions 8' 8" core loss
105-2	Dark and light gray shaley, silty claystone 8" siderite zone in center
112-6	Fine sandstone. 6" of interbedded siltstone and sandstone at top and bottom 5' core loss
122-3	Light grey shaley silty claystone. and clay shale grading to shaley claystone. Limey pellets, stringers and inclusions.
154-6	Interbedded siltstone and fine sandstone Plant fossils
156-9	Coal LOWER BAKERSTOWN
169-1	Light gray, silty semi-plastic clay grading to silty claystone.
175-1	Interbedded siltstone and fine sandstone.
199-9	Fine to medium grained sandstone
217-3	Light grey siltstone
218-9	Medium grained sandstone

Hole #6
CB

224-7	Dark grey siltstone grading to shaley claystone. Plant fossils.
229-8	Gray claystone. Limey pellets stringers and inclusions.
243-8	Interbedded siltstone and fine sandstone.
261-2	Gray silty claystone grading to shaley claystone.
283-2	Dark grey shaley claystone grading to black carbonaceous clay, marine fossils.
283-10	Coal - BRUSH CREEK
304-2	Grey silty claystone. Limey stringers and pellets.
307-4	Siltstone. Irregularly intermixed fine sandstone.
314-0	Grey silty claystone. Limey stringers.
323-8	Light grey and greenish gray siltstone.
326-7	Fine grained sandstone. (CB61)
327-5	Fragmental flint and semiplastic clay
333-5	Silty claystone. Interbedded siltstone and fine sandstone.
345-8	Grey silty claystone
363-6	Dark grey siltstone, 2½ feet of irregularly interbedded fine sandstone at base.
371-9	Medium grained sandstone.
372-6	Interbedded siltstone, silty claystone and fine sandstone
380-2	Grey silty claystone, locally shaley Limey lenses and stringers.
381-0	Black carbonaceous claystone grading to dark grey claystone.
387-0	Light grey claystone grading to dark grey silty claystone. Plant fossils

390-5	Interbedded siltstone and fine sandstone.
391-4	Shaley silty claystone. Intercalated siltstone and fine sandstone. Plant fossils
393-4	Coal
395-0	Dark grey silty claystone.
398-0	Dark grey siltstone and silty claystone. Limey pellets.
406-11	Light grey silty claystone. Limey pellets and stringers.
422-6	Grey siltstone. Intercalated fine sandstone. Limey pellets and stringers.
440-2	Interbedded siltstone and fine sandstone.
445-5	Black silty shaley claystone.
446-7	Coal
455-5	Dark grey to black silty claystone.
456-7	Coal
461-10	Dark grey intermixed siltstone, sandstone and silty claystone.
467-8	Interbedded siltstone and fine sandstone.
468-10	Coarse to conglomeritic sandstone. Coaly partings.
472-2	Light grey siltstone.
473-9	Dark grey claystone. grading to light grey silty semi-plastic clay.
497-2	Light grey siltstone. Intercalated fine sandstone.
499-1	Fine grained sandstone.
502-2	Light grey siltstone.
509-7	Medium grained sandstone.
519-6	Light grey siltstone. Intercalated fine sandstone.
522-9	Dark grey silty shaley claystone. Intercalated siltstone and fine sandstone. Plant fossils.

525-3	Interbedded siltstone and fine sandstone.
536-0	Black shaley claystone. Plant fossils. 18 inch siderite nodule at 531-3+.
537-6	Coal
538-7	Black claystone. Coaly partings.
539-10	Coal
542-1	Light grey silty claystone. Three inches of fine sandstone at base
546-9	Grey brown shaley claystone grading to black carbonaceous claystone.
557-1	Light grey siltstone. Intercalated fine sandstone and silty claystone.
574-7	Interbedded siltstone and fine sandstone.
581-9	Medium grained sandstone.
582-11	Coal
583-11	Black claystone.
584-8	Dark grey medium grained sandstone. Plant fossils.
585-2	Fragmental flint clay and silty claystone.
585-11	Coal
593-0	Interbedded siltstone and fine sand stone
596-9	Black shaley claystone.
598-0	Light grey claystone.
600-7½	Coal and bone.
602-8	Black clay shale.
604-8	Light grey silty claystone.
606-2	Fragmental flint clay and black claystone.
606-7	Carbonaceous claystone
607-10	Dark grey silty shaley claystone.

612-3	Medium grained grading to conglomeritic stylolitic sandstone.
635-2	Medium grained sandstone. Coal partings in lower three feet.
643-9	Interbedded siltstone and fine sandstone. 2 ft of siltstone at top.
669-0	Fine to medium grained stylolitic sandstone.
672-11	Dark grey to black silty shaley claystone. Plant fossils.
674-3	Light grey silty claystone.
682-0	Interbedded siltstone and fine sandstone.

Bottomed at 682-0

Hole #1 C.B.	El. 2502
32	Surficial material
45-3	Medium grained sandstone.
56-1	Black shaley claystone. Marine fossils
57-2	Coal - Brush Creek.
58-4	Grey silty claystone
64-1	Interbedded siltstone and fine sandstone
67-1	Medium grained sandstone. Some intercalated siltstone
76-1	Light grey siltstone grading to claystone. Limey pellets.
86-10	Light grey silty claystone.
89-10	Light grey and green claystone grading to silty claystone. Minor red mottling.
99-0	Light gray silty claystone grading to siltstone.
112-0	Light green silty claystone and claystone. Some red mottling.
113-8	Green and red fragmental claystone and semi-flint clay.
130-4	Light green and gray silty claystone and claystone, locally mottled red. Siderite nodules and scattered small pellets throughout.
133-0	Fragmental grey silty claystone and light brown flint clay.
136-4	Light grey siltstone grading to silty claystone.
140-7	Interbedded siltstone and fine sandstone.
144-7	Dark grey clay shale.
147-4	Fine grained sandstone. Some intercalated siltstone.
153-6	Grey shaley claystone grading to silty claystone.

Hole #7 CB	
153-10	Carbonaceous claystone.
165-0	Grey silty claystone grading to siltstone.
198-4	Interbedded siltstone and fine sandstone.
208-2	Medium grained sandstone
214-2	Interbedded siltstone and fine sandstone.
218-4	Medium grained sandstone Intercalated siltstone.
230-3	Medium grained sandstone. Lenses and fragments of siltstone throughout.
231-0	Coal
231-9	Carbonaceous claystone
242-6	Grey silty claystone. Limey pellets and stringers.
244-3	Argillaceous limestone.
249-3	Light gray siltstone. Limey stringers and inclusions
256-8	Light grey to black silty claystone. One foot of semiplastic clay at top.
260-3	Grey silty claystone grading to siltstone
264-3	Black silty claystone. Plant fossils
267-6	Coal and bone
272-7	Argillaceous limestone. Four inch siderite nodule at 271-6.
292-1	Grey silty claystone, limey pellets stringers and inclusions, grading to light gray clayey siltstone.
304-6	Medium grained sandstone
307-4	Light grey claystone grading to dark grey silty claystone.
308-3	Coaly claystone
309-4	Dark grey silty claystone. Plant fossils.
310-2	Bone

#7
CB

318-3	Interbedded siltstone and fine sandstone. Plant fossils.
319-0	Bone
327-3	Light grey siltstone
330-8	Interbedded siltstone and fine sandstone.
348-9	Fine to medium grained stylolytic sandstone. Locally quartzitic.
357-7	Interbedded siltstone and fine sandstone.
375-8	Medium grained stylolytic sandstone.
376-10	Dark grey silty claystone grading to siltstone.
385-1	Medium to coarse grained stylolitic sandstone
386-6	Dark grey siltstone, coarse sand grains throughout.
387-4	Coaly to carbonaceous claystone
389-8	Bone and shale.
393-6	Light grey semi-plastic clay grading to silty claystone.
395-9	Light grey siltstone.
405-10	Interbedded siltstone and fine sandstone.
415-8	Light grey siltstone. Intercalated fine sandstone.
430-4	Fine to medium grained stylolitic sandstone.
431-8	Interbedded siltstone and fine sandstone.
434-11	Medium grained sandstone.
435-7	Coaly claystone. Narrow coal seams.
436-4	Irregularly interbedded sandstone claystone and siltstone.
440-6	Dark grey shaley claystone.
440-11	Fine grained sandstone
443-3	Coal
446-4	Dark grey silty claystone and grey-brown silty semi-plastic clay

Hole #7
C.B.

450-4	Flint clay. 8 inches of plastic clay at top
465-11	Dark grey silty, shaley claystone. Interbedded siltstone and fine sandstone. Plant fossils.
473-0	Medium grained styolytic sandstone.
479-11	Coarse to conglomeritic styolytic sandstone.
484-2	Conglomerate
485-5	Dark grey silty shaley claystone. Plant fossils.
489-3	Coal and bone
490-7	Black silty shaley claystone. lenses of fine sandstone.
495-9	Light grey silty semi-plastic clay grading to black silty claystone.
501-8	Light grey shaley claystone. Plant fossils.
503-1	Boney coal, bone and carbonaceous claystone.
506-7	Light grey claystone with plant fossils grading to light grey siltstone.
508-8	Interbedded siltstone and fine sandstone.
510-8	Light grey silty claystone. Plant fossils. Grades to light grey siltstone.
511-1	Fine grained micaceous sandstone.

End of Hole

Hole #9 CB	E1.
24 - 0	Surficial material
37 - 4	Light grey silty claystone grading to tan siltstone, Some limey stringers.
42 - 10	Interbedded siltstone and fine sandstone.
47 - 4	Medium grained sandstone
56 - 0	Dark grey silty claystone. Plant fossils.
64 - 5	Interbedded siltstone and fine grained sandstone.
71 - 0	Light grey to black silty claystone. Plant fossils.
72 - 2	Coal
81 - 3	Light grey argillaceous limestone.
108 - 7	Light grey claystone. Limey pellets, stringers and inclusions and lenses.
109 - 4	Interbedded siltstone, silty claystone, and fine grained sandstone.
119 - 2	Light grey silty claystone.
119 - 7	Coal and carbonaceous claystone.
123 - 7	Light grey siltstone. Intermixed fine sandstone.
127 - 4	Light grey silty claystone and clay.
136 - 2	Light grey and greenish gray silty claystone. Limey pellets and stringers throut.
144 - 2	Interbedded siltstone and fine sandstone. Limey pellets and stringers in upper 5 ft.
173 - 5	Fine to medium grained sandstone. Conglomeritic zones in lower 4 ft.
178 - 10	Irregularly interbedded siltstone and fine sandstone.
194 - 11	Black shaley claystone. Marine fossils Four inch siderite nodule at 191-11
	AMES SHALE
196 - 5	Coal HARLEM
204 - 11	Dark to light grey limey claystone. Limey pellets throut.

Hole #9 CB	
216-10	Light grey argillaceous limestone grading to limey claystone with limey pellets.
228-0	Light grey silty claystone, locally mottled red. Siderite pellets and stringers in upper 4 ft. Limey pellets and inclusions
256-1	Fine grained sandstone.
	Light grey silty claystone grading to claystone. Locally shaly
269-9	Dark grey to black shaly claystone.
272-3	Interbedded siltstone, silty claystone and fine sandstone.
274-0	Dark grey silty claystone. Plant fossils,
276-3	Bone UPPER BAKERSTOWN
279-5	Dark grey limey claystone. Limey pellets and stringers.
291-5	Dark to light grey silty claystone and bastard clay. Limey lenses, stringers, pellets and inclusions
313-3	Dark grey to black silty claystone. Locally shaly. Limey stringers
315-1	Coal LOWER BAKERSTOWN
324-2	Dark to light grey silty claystone. Limey pellets.
332-2	Interbedded gray to green siltstone and fine sandstone.
335-10	Light greenish gray silty claystone.
350-0	Light grey and green claystone, locally mottled red. Limey stringers
359-6	Interbedded siltstone and fine sandstone Limey lenses and stringers.
373-11	Light green and grey silty, shaly claystone. Three inch siderite nodule at 365-1
393-8	Light to dark grey silty claystone, locally mottled red. Limey pellets, stringers and inclusions

400-3	Dark grey silty shaley claystone. Limey stringers.
418-9	Interbedded siltstone and fine sandstone.
429-8	Fine grained sandstone.
441-4	Dark grey silty shaley claystone. Marine fossils
442-11	Coal BRUSH CREEK
455-8	Dark to light grey silty claystone, Limey stringers.
459-7	Interbedded siltstone, fine sandstone and silty claystone.
475-2	Light grey silty claystone
480-11	Green claystone, red mottling.
482-4	Fragmental green claystone and semi-flint clay.
489-6	Grey and green silty claystone.
499-2	Interbedded siltstone and fine sandstone.
501-6	Light grey silty claystone. 3" siderite nodule at 499-10
518-0	Grey and green silty claystone, Red mottling. Limey lenses and stringers.
523-8	Interbedded siltstone and fine sandstone.
535-2	Light to dark grey silty shaly claystone. Limey lenses and stringers
537-4	Tan silty, semi-plastic clay.
549-11	Light to dark grey silty claystone. Plant fossils grading to siltstone in lower 3 ft.
566-4	Interbedded siltstone and fine sandstone. Plant fossils.
570-1	Fine grained sandstone.
571-0	Dark grey silty shaly claystone.
574-11	Coal Freeport
582-0	Light grey Argillaceous Limestone

H 8

587-11	Grey silty shaly claystone, locally shaly.
591-2	Fragmental flint and semi-flint clay
607-6	Grey silty claystone, locally shaly. Siderite nodule from 519-6 to 600-6
616-8	Interbedded siltstone and fine sandstone.
622-8	Fine grained sandstone
623-1	Bone
623-6	Grey silty claystone.
625-4	Fragmental flint clay, claystone matrix, Siderite in upper part
627-2	Light tan semi-plastic clay
631-6	Greenish grey claystone. Siderite nodules up to 1 ft thruout.
632-7	Interbedded green siltstone and fine sandstone.
635-11	Fragmental claystone, semi-flint, flint and semi-plastic clay.
639-7	Grey silty claystone
641-11	Interbedded siltstone and fine sandstone
689-10	Grey grading to black silty claystone. Plant fossils in lower 4 ft.
694-6	Core loss
695-0	Bone
695-5	Black claystone. Light brown claystone pellets.
696-2	Brown silty semi-plastic clay
701-7	Lt grey silty claystone. Siderite nodules up to 10" thruout.
703-1	Fragmental claystone and semi-flint clay
708-7	Grey silty claystone.
723-10	Interbedded siltstone and fine sandstone.
757 cor. from 755-7 on back USBM 109	Fine to coarse stylolitic sandstone. Locally conglomerate

#8

758-1	Coal
764-1	Silty claystone
778-7	Interbedded siltstone and silty claystone (sideritic in lower part) grading to black shaley claystone
bone 777.5 to 777.9	
784-1	Tan silty claystone. Plant rootlets in upper foot.
785-0	Coal.
793-2	Tan silty claystone grading to siltstone.
830-7	Interbedded siltstone and fine sandstone.
833-2	Dark grey silty claystone
844-3	Siltstone
845-0	Silty claystone
864-0	Siltstone, Interbedded sandstone in lower half.

Hole H-9 CB	El. 2-5-6
44 - 7	Medium to coarse grained sandstone.
67 - 9	Black shaly claystone. Marine fossils.
69 - 4	Coal HARLEM
98 - 8	Grey argillaceous limestone.
105 - 10	Greenish grey limey claystone. Limey pellets and stringers.
122 - 3	Greenish grey siltstone. Limey stringers and pellets.
126 - 11	Light grey silty claystone.
133 - 6	Light grey shaly claystone. Locally clay shale.
136 - 11	Fine sandstone
145 - 5	Grey silty claystone. Locally shaly
147 - 8	Grey claystone. Limey stringers and lenses
149 - 8	Dark grey silty claystone. Lacks of carbonaceous claystone
157 - 8½	Coal, bone and shale. UPPER BAKERSTOWN
161 - 3	Grey claystone
163 - 7	Grey argillaceous limestone
171 - 2	Light grey silty semi-plastic clay. Grading to shaly claystone. Limey stringers and inclusions
185 - 5	Interbedded siltstone, fine sandstone and silty claystone. Plant fossils. Limey lenses in upper 2 ft.
187 - 0	Silty shaly claystone. Plant fossils.
188 - 11	Coal LOWER BAKERSTOWN
193 - 6	Dark to light grey semi-plastic clay. Silty at top and bottom
194 - 10	Interbedded siltstone and fine sandstone.
210 - 1	Grey shaly claystone. Beds of siltstone and fine sandstone.
221 - 4	Light grey and green silty claystone. Red mottling.
231 - 11	Fine sandstone. Minor interbedded siltstone.

248 - 4	Light grey and greenish grey silty, shaly claystone.
258 - 2	Light grey and green silty claystone, mottled red.
262 - 4	Interbedded siltstone and fine sandstone Silty streaks
265 - 2	Fine sandstone. Silty streaks.
282 - 7	Interbedded siltstone and fine sandstone.
292 - 2	Dark grey silty, shaly claystone. Plant fossils in upper 4 ft.
310 - 3	Dark grey to black silty shaly claystone. Marine fossils.
311 - 4	Coal BRUSH CREEK
315 - 11	Interbedded siltstone and fine sandstone.
317 - 8	Fine grained sandstone.
331 - 8	Light grey silty claystone. Limey pellets.
340 - 10	Interbedded siltstone and fine sandstone.
351 - 9	Light grey and green silty claystone. Limey stringers and lenses.
355 - 4	Fragmental green claystone and flint clay.
359 - 2	Gray silty claystone, mottled red and green.
373 - 3	Interbedded light green siltstone and fine sandstone.
381 - 11	Light grey claystone. Red mottling.
395 - 1	Interbedded siltstone and fine sandstone.
419 - 9	Grey silty shaly claystone. Limey stringers
422 - 1	Interbedded siltstone, fine sandstone and silty claystone. Plant fossils.
423 - 0	Dark grey silty shaly claystone. Plant fossils.
425 - 1	Coal Upper FREEPORT
430 - 7	Grey siltstone, sandy streaks, limey pellets and stringers.
468 - 0	Interbedded siltstone and fine sandstone. Some limey pellets and stringers in upper 6 ft.

469-10	Interbedded siltstone and fine sandstone. Beds of coal and carbonaceous claystone up to 3 inches
470-10	Dark to light grey silty claystone.
482-6	Interbedded siltstone and fine sandstone.
509-3	Fine to medium grained sandstone. Conglomeritic at 477-8. Stylolitic at base.
512-3	Coal
514-9	Dark grey silty shaly claystone.
525-4	Interbedded siltstone and fine sandstone
540-11	Medium grained sandstone. Siltstone beds.
542-3	Fragmental siltstone and medium grained sandstone.
549-9	Medium grained sandstone.
555-2	Interbedded siltstone and fine sandstone.
560-6	Grey silty claystone
561-11	Medium grained stylolitic sandstone. Six inches of fragmental siltstone at base
567-4	Dark grey siltstone grading to black silty claystone.
568-7	Interbedded siltstone and fine sandstone
570-6	Dark grey silty shaly claystone.
572-9	Coal and bone.
583-9	Light grey silty semi-plastic clay grading to black silty shaly claystone.
584-10	Carbonaceous shale
585-2	Sandstone
586-0	Coal and shale
589-10	Dark grey silty shaly claystone
595-0	Interbedded siltstone and fine sandstone

Elevation 2,572

#10 CR.	
24 - 0	Surficial material.
53 - 0	Interbedded siltstone and fine sandstone.
62 - 11	Grey silty claystone. Limey pellets stringers and lenses.
67 - 3	Black to grey silty claystone.
68 - 2	Bone and coal
70 - 3	Carbonaceous shale
77 : 7	Grey silty shaly claystone.
78 - 6	Coal
92 - 1	Grey limey claystone. Limey pellets and lenses.
94 - 0	Light grey argillaceous limestone.
98 - 0	Green silty limey claystone. Lenses and pellets of argillaceous limestone.
100 - 5	Grey limey claystone. Limey pellets
101 - 6	Core loss.
112 - 11	Greenish grey silty claystone grading to shaly claystone.
124 - 10	Interbedded siltstone and fine sandstone
128 - 4	Light grey clay shale.
130 - 4	Interbedded siltstone and fine sandstone.
132 - 11	Dark grey grading to black shaly claystone.
134 - 3½	Bone and coal
138 - 3	Dark to light grey silty claystone Limey pellets in lower ft.
140 - 6	Medium grained sandstone. Limey inclusions.
142 - 9	Grey claystone.
145 - 3	Interbedded siltstone, fine sandstone and silty claystone
154 - 11	Grey silty shaly claystone.
160 - 10	Medium grained sandstone.
162 - 8	Interbedded siltstone and fine sandstone.

168-3	Fine to coarse grained sandstone. Locally conglomeritic
173-1	Dark grey siltstone grading to silty claystone.
196-4	Black shaly claystone. Marine fossils.
197-9½	Coal - Harlem
257-4	Grey to green claystone grading to silty shaly claystone. Red mottling Limey pellets and inclusions.
275-6	Fine grained sandstone grading to green siltstone.
278-6	Shaly claystone
279-3	Black silty claystone.
281-2½	Bone and shale
296-5	Silty clay and claystone. Limey pellets and inclusions.
315-6	Shaly claystone, silty and sandy streaks.
317-9½	Coal Lower Bakerstown
319-8	Silty semi-plastic clay
338-6	Shaly claystone grading to clay shale
340-0	Siltstone grading to fine sandstone.
354-4	Green clay and claystone. Red mottling
380-0	Greenish clay shale. Interbedded siltstone. Minor sandstone in upper half.
387-10	Greenish grey red mottled clay. Limey stringers at base.
414-10	Fine grained greenish sandstone grading to grey siltstone.
434-4	Dark grey siltstone grading to clay shale. Plant fossils.
444-10½	Dark grey to black shale. Marine fossils
446-0	Coal - Brush Creek
449-8	Silty claystone and siltstone.
451-0	Fine sandstone.
474-8	Silty clay and claystone. Limey pellets in upper 6 ft.

481-4	Fragmental claystone. Siltstone matrix.
485-0	Gray and green claystone and silty claystone 6" siderite nodule at base.
502-10	Grey and greenish grey shaly claystone
516-1	Fine to medium grained sandstone. Silty layers in upper part.
523-11	Shaly claystone grading to clay shale.
535-1	Interbedded siltstone and fine sandstone.
543-0	Shaly claystone grading to black clay shale
544-3	Coal UF Miller
550-1	Dark grey shaly claystone grading to grey clay shale. Interbedded sandstone in middle part.
552-3	Coal - Freeport
598-6	Gray to greenish grey claystone Silty zones. Minor fragmental claystone in upper half.
623-6	Fine to medium sandstone.
657-11	Stylolitic, conglomeritic sandstone. Locally conglomerate
663-10	Dark grey silty claystone.
686-3	Silty shaly claystone. Beds of fine sandstone
691-10	Interbedded siltstone, fine sandstone and silty claystone.
694-9	Dark grey silty claystone.
695-2½	Carbonaceous claystone
695-9½	Coal
701-2	Fine to medium grained sandstone
712-3	Black silty claystone grading to shaly claystone. Sandstone beds thruout.
714-11	Coal
721-8	Silty claystone. Sandstone beds at base
726-9	Dark grey clay shale
727-4	Bone | 728-2 Gubsh ss | 730-2 Bone + coal
734-0	Silty claystone. Plant rootlets.

Bottomed at 734-0

Hole #11	Elevation
12 - 0	Surficial material
34 - 9	Light grey silty claystone grading to black clay shale. Plant fossils in lower half.
36 - 10	Coal
41 - 3	Core loss
43 - 3	Light grey semi-plastic clay
52 - 6	Core loss
63 - 3	Greenish grey silty claystone. Red mottling.
67 - 10	Interbedded greenish grey claystone, siltstone, and fine grained sandstone.
108 - 10	Green silty claystone, locally shaly. Red mottling. Limey pellets and stringers in center part.
149 - 5	Fine grained sandstone. Coaly partings at base.
155 - 4	Dark grey silty claystone. Limey stringers.
162 - 7	Green silty claystone. Siderite stringers.
164 - 4	Fragmental green claystone and silty claystone. Siderite stringers
177 - 4	Green silty claystone. Siderite pellets and lenses
180 - 0	Fragmental green claystone and tan semi-flint clay.
186 - 4	Greenish grey silty claystone.
188 - 2	Interbedded silty claystone, siltstone, and fine sandstone.
201 - 0	Light grey siltstone 1 ft. sideritic zone at base.
207 - 4	Interbedded siltstone and fine grained sandstone.
212 - 4	Medium grained sandstone.
217 - 10	Olive green silty claystone.

223-4	Interbedded siltstone and fine grained sandstone.
232-3	Grey shaly claystone grading to siltstone.
237-1	Interbedded siltstone and fine grained sandstone.
244-4	Fine to medium grained sandstone. Silty streaks.
246-10	Dark grey silty claystone. Plant fossils.
262-6	Fine sandstone. Siltstone fragments and beds.
289-6	Fine to medium grained sandstone.
297-3	Black silty shaly claystone. Plant fossils.
320-6	Medium grained sandstone.
353-10	Dark grey silty shaly claystone. Interbedded siltstone and fine grained sandstone. Plant fossils.
364-0	Medium to coarse grained stylolitic sandstone. Siltstone pebbles in lower foot.
377-3	Grey silty claystone.
386-7	Fine grained sandstone.
388-0	Grey claystone grading to black clay shale.
390-4	Grey silty claystone grading to siltstone.
393-11	Fine to medium grained sandstone. Siltstone beds.
396-7	Carbonaceous claystone grading to carbonaceous shale.
398-2	Black silty claystone, some interbedded fine grained sandstone
400-9	Coal and shale.
417-3	Interbedded siltstone and fine grained sandstone, some claystone in lower half. Plant fossils.
419-0	Coal
420-7	Light grey siltstone, plant rootlets.

423-1	Fragmental siltstone and silty claystone
430-8	Tan siltstone grading to silty claystone
431-0	Dark grey fragmental silty claystone and semi-flint clay. Pyrite seams in lower 3".
432-0	Coal
435-5	Tan, silty, shaly claystone. Plant fossils.
438-6	Interbedded siltstone and fine sandstone.
461-6	Fine to medium grained styolitic sandstone
481-10	Grey. siltstone Plant fossils.
493-6	Grey silty claystone grading to shaly siltstone.
500-3	Fine to medium grained styolitic sandstone
500-10	Conglomerate
507-2	Fine grained sandstone.
508-1	Dark grey to black clay shale.
529-10	Fine to medium grained styolytic sandstone.
531-11	Coal
543-7	Black, silty, shaly claystone, minor interbedded siltstone Plant fossils.
545-11	Fine grained sandstone. 1" of coal at base.
548-6	Coarse grained sandstone grading to conglomerate.
571-9	Interbedded dark grey siltstone and silty claystone. Some fine grained sandstone.
594-5	Medium grained sandstone.
596-3	Brown claystone.
603-0	Interbedded siltstone and fine grained sandstone.
630-0	Fine to medium grained styolitic sandstone, silty beds in upper part.

Bottomed at 630-0

Hole # 12 CB	Elevation 2565
20 - 4	Surficial material
30 - 6	Medium grained sandstone.
32 - 6	Light grey siltstone.
62 - 9	Black shaly claystone. Marine fossils.
64 - 8	Coal HARLEM
83 - 4	Light grey limey claystone.
94 - 3	Light grey siltstone. Limey pellets and stringers.
97 - 3	Grey limey claystone. Red mottling.
113 - 5	Green silty shaly claystone grading to green claystone.
115 - 8	Interbedded fine sandstone and green siltstone.
128 - 10	Green silty clay shale.
129 - 8	Black clay shale
131 - 4	Green silty shaly claystone.
139 - 0	Fine grained sandstone. One foot of fragmental siltstone at base.
144 - 3	Light grey shaly claystone grading to silty shaly claystone.
145 - 2	Black carbonaceous claystone.
145 - 7	Coal
146 - 2	Black carbonaceous claystone
147 - 1	Coal
167 - 2	Grey silty claystone. Limey lenses, pellets, and inclusions.
171 - 9	Interbedded siltstone, silty claystone, and fine grained sandstone.
181 - 4½	Black, silty, clay shale. Plant fossils.
183 - 7½	Coal
192 - 2	Grey silty clay and claystone.
204 - 8	Grey silty claystone, locally shaly. Limey stringers.
214 - 8	Grey and green claystone. Red mottling.
219 - 9	Interbedded siltstone, silty claystone, and fine grained sandstone. Limey stringers.

222-11	Fine grained sandstone.
240-6	Grey silty clay shale. 3" siderite nodule at 239-7
247-8	Grey and green claystone.
266-0	Interbedded siltstone, silty claystone and fine grained sandstone.
279-7	Black shaly siltstone grading to silty clay shale. Plant fossils.
300-0	Black silty clay shale. Marine fossils.
300-8	Bone BRUSH CREEK
303-5	Fine grained sandstone.
316-9	Grey silty claystone. Limey lenses and inclusions in upper 6 feet.
320-4	Interbedded siltstone, silty claystone, and fine grained sandstone.
331-5	Grey silty claystone. Siderite nodules at 324' and 330'
338-0	Green siltstone grading to silty claystone.
342-4	Fragmental green claystone and semi-flint clay
358-3	Green silty claystone, locally shaly. 3" siderite nodule at base.
360-7	Medium grained sandstone.
366-11	Grey silty claystone grading to siltstone.
376-0	Grey and red claystone.
376-10	Green fragmental claystone and semi-flint clay.
387-0	Grey siltstone. Some limey pellets and stringers at base.
389-8	Grey silty claystone grading to black shaly claystone.
399-1	Grey claystone grading to siltstone.
406-9	Interbedded siltstone and fine grained sandstone.
419-3	Fine grained sandstone.

421 - 1½	Coal FREEPORT
427 - 3	Dark grey silty claystone. Plant rootlets in upper foot. Limey pellets in lower two feet.
430 - 10	Fragmental claystone, flint clay and silty semi-plastic clay.
433 - 10	Interbedded siltstone and fine grained sandstone. Limey inclusions in upper foot.
444 - 10	Dark to light grey claystone and silty claystone. 6" siderite zone at 437-2
447 - 10	Interbedded siltstone and fine grained sandstone.
455 - 7	Grey grading to black shaly claystone.
456 - 9	Coal
463 - 3	Grey silty claystone, plant rootlets, grading to siltstone.
473 - 9	Interbedded siltstone and fine grained sandstone
492 - 8	Fine grading to medium grained styolitic sandstone.
509 - 6	Medium to coarse grained styolitic conglomeritic sandstone.
511 - 0	Coal
532 - 4	Grey claystone and silty claystone, locally shaly.
539 - 4	Grey siltstone.
548 - 11	Interbedded siltstone and fine grained sandstone.
551 - 4	Dark grey silty claystone. Some interbedded fine grained sandstone at base.
553 - 6	Interbedded siltstone and fine grained sandstone
554 - 0	Carbonaceous shale.
555 - 8	Coal
565 - 9½	Dark grey silty claystone, interbedded siltstone and fine grained sandstone Plant rootlets.

567-½	Coal
568-0	Black shaly claystone. Plant fossils.
570-1½	Fine grained sandstone. Silty streaks.
572-1½	Coal
582-0	Grey silty claystone and siltstone. Plant rootlets at top
588-0	Interbedded siltstone and fine grained sandstone.
589-7	Black clay shale.
590-0	Coal
590-2	Carbonaceous claystone.
602-7	Fine grained sandstone.
605-9½	Coal.
606-6	Grey silty claystone. Plant rootlets
607-7	Coal
609-6	Interbedded siltstone and fine grained sandstone.
615-5	Black shaly claystone.
615-11	Coal
621-10	Tan silty claystone grading to siltstone. Sandy streaks in lower foot.
623-7	Fine grained sandstone.
629-2	Grey silty shaly claystone grading to black clay shale.
630-8	Black silty shaly claystone, interbedded fine sandstone.
631-2	Black shaly claystone. Coaly partings.
634-0	Black silty shaly claystone, interbedded fine grained sandstone, grading to black clay shale.

Bottomed at 634-0 December 31, 1947

Hole #13

7 - 0	Surficial material
59 - 11	Interbedded siltstone and fine sandstone. Bedding irregular in upper half.
69 - 9	Black clay shale. Marine fossils
71 - 9	Coal BRUSH CREEK
77 - 11	Grey limey claystone grading to claystone. Limey pellets, lenses and inclusions.
86 - 7	Grey claystone grading to silty claystone.
92 - 0	Siltstone grading to fine sandstone.
104 - 8	Dark to light grey claystone and silty claystone.
106 - 6	Green silty claystone.
108 - 7	Green fragmental claystone and semi-flint clay.
119 - 5	Grey silty claystone, stringers of yellowish material in upper part.
134 - 9	Green silty claystone, shaly at base.
140 - 10	Interbedded siltstone and fine grained sandstone.
143 - 0	Grey clay shale grading to carbonaceous shale.
145 - 9	Interbedded siltstone, fine sandstone, and silty claystone.
147 - 3	Grey, silty, clay shale.
155 - 10	Black clay shale. Plant fossils.
156 - 3	Coal
164 - 2	Dark grey to black silty claystone.
164 - 8	Carbonaceous shale
179 - 6	Black silty, shaly claystone, interbedded siltstone and fine grained sandstone.
180 - 11	Carbonaceous shale.
184 - 6	Coal FREEPORT (upper)
196 - 4	Argillaceous limestone. Few lenses of limey claystone.
197 - 5	Light grey and brown fragmental semi-plastic clay.

201 - 5	Lt. grey siltstone, scattered fragments of light brown flint clay in lower half.
205 - 9	Fragmental light tan and blueish grey flint clay.
217 - 10	Grey silty claystone.
222 - 9	Interbedded siltstone, silty claystone, and fine grained sandstone.
230 - 10	Grey silty claystone.
234 - 8	Limey claystone, lenses of argillaceous limestone.
237 - 0	Fragmental, light brown flint and semi-plastic clay.
244 - 7	Interbedded siltstone and fine sandstone. Plant fossils.
247 - 7	Black, silty, shaly claystone grading to carbonaceous claystone.
250 - 5	Coal
257 - 3	Grey silty claystone grading to siltstone.
260 - 7	Fine grained sandstone grading to siltstone.
265 - 1	Grey claystone.
271 - 5	Interbedded siltstone and fine sandstone.
278 - 9	Dark grey, silty, shaly claystone.
280 - 5	Interbedded siltstone and fine sandstone.
286 - 2	Grey shaly claystone grading to dark grey silty claystone. Plant fossils.
290 - 5	Interbedded siltstone and fine sandstone.
299 - 9	Dark grey silty shaly claystone. Plant fossils.
301 - 9	Coal and bone.
320 - 6	Grey claystone grading to siltstone.
336 - 9	Interbedded siltstone and fine sandstone.
346 - 8	Dark grey, silty, shaly claystone.
356 - 4	Medium to coarse grained stylolitic sandstone.
357 - 2	Bone
359 - 1	Interbedded claystone and fine grained sandstone. Coaly partings.
360 - 2	Carbonaceous claystone.
361 - 2	Coal

363-5	Light brown claystone.
377-0	Grey siltstone.
381-7	Grey claystone, siderite pellets thruout
382-8	Light brown, fragmental semi-flint clay. Claystone matrix. Siderite pellets thruout.
386-8	Dark grey siltstone grading to silty claystone.
388-8	Fine grained sandstone.
401-0	Black clay shale grading to dark brown silty claystone. Plant fossils.
407-7	Grey siltstone, sandy streaks.
431-3	Fine grained stylolitic sandstone.
431-11	Dark grey silty claystone.
432-2	Coal
432-11	Dark grey silty claystone.
439-7	Fine grained sandstone, siltstone fragments in upper part.
444-11	Dark grey claystone.
450-9	Carbonaceous claystone, small, local, coaly seams and partings.
460-2	Brown claystone grading to grey siltstone.
518-3	Medium grained, stylolitic sandstone.
527-0	Fine grained sandstone. Minor interbedded siltstone.

Bottomed at 527'

DDH # 14

16 - 9	Surficial material
26 - 9	Siltstone and silty claystone. Iron staining. 6'2" core loss
28 - 7	Dark grey silty claystone. 3'9" core loss.
30 - 10	Coal, bone and shale
33 - 0	Dark grey limey claystone.
35 - 7	Black claystone
37 - 6	Grey limey claystone and argillaceous limestone
43 - 4	Dark grey claystone. 5" siderite nodule at center.
70 - 3	Dark grey to black shaly claystone.
72 - 10	Coal - LOWER BAKERSTOWN
80 - 7	Grey silty claystone. Limey pellets
84 - 9	Grey claystone grading to silty claystone.
88 - 4	Interbedded siltstone and fine grained sandstone.
90 - 5	Greenish-grey, silty, shaly claystone Limey stringers.
96 - 3	Gray, silty claystone.
104 - 10	Green claystone and clay. Red mottling
108 - 5	Light green silty shaly claystone. Siderite stringers and pellets thruout.
113 - 0	Medium grained sandstone
129 - 7	Light-green, silty, shaly claystone, interbedded siltstone and fine sandstone. Limey stringers in upper part.
130 - 3	Dark grey silty claystone, shaly in upper part. Cambridge Shale
139 - 0	Dark green silty claystone. Limey pellets and inclusions.
176 - 0	Interbedded siltstone, fine grained sandstone and green silty claystone.

182 - 5	Black shaly claystone, Plant fossils
201 - 4	Black clay shale, Marine fossils.
203 - 1	Coal - BRUSH CREEK
213 - 2	Grey silty claystone, limey pellets and lenses.
226 - 0	Grey and green silty claystone and clay.
228 - 0	Fragmental green and tan claystone and semi-flint clay.
232 - 5	Grey claystone.
249 - 6	Green silty claystone, interbedded siltstone and fine grained sandstone
251 - 10	Fragmental green claystone and semi-flint clay.
262 - 2	Grey silty claystone.
273 - 1	Interbedded siltstone and fine sandstone, Micaceous.
280 - 11	Grey claystone and silty claystone, limey lenses and inclusions.
281 - 11	Tan claystone
313 - 7	Light grey grading to dark grey siltstone. Plant fossils.
324 - 3	Irregularly interbedded siltstone and fine grained sandstone.
330 - 9	Dark grey siltstone grading to silty claystone.
331 - 5	Coal
342 - 10	Blue grey argillaceous limestone, interbedded limey claystone.
345 - 2	Grey fragmental bastard clay, 3" limey lense at base.
346 - 5	Fragmental claystone and semi-flint clay
352 - 5	Grey claystone grading to silty claystone.
355 - 10	Interbedded siltstone and fine grained sandstone.

357-11	Grey silty claystone
366-9	Fine grained sandstone
386-6	Dark grey silty claystone, limey pellets and lenses. Large siderite nodules in upper part.
393-3	Dark grey siltstone, sandy streaks.
397-0	Fine grained sandstone.
406-8	Interbedded siltstone and fine grained
412-2	sandstone.
412-2	Light green grading to tan silty, shaly claystone.
413-11	Light brown fragmental claystone and flint clay.
420-11	Dark grey silty claystone, limey inclusions.
425-1	Fine grained sandstone, silty streaks in upper part.
430-0	Light grey silty shaly claystone, sandy streaks. Small siderite nodules thruout.
442-7	Dark grey silty claystone. Siderite nodules up to 11" thruout.
443-3	Irregularly interbedded siltstone and fine grained sandstone.
447-10	Black clay shale.
448-5	Coal and bone.
467-7	Light grey, grading to dark grey silty claystone.
470-0	Coal
489-0	Dark grey claystone, plant fossils, grading to silty claystone.
506-11	Coarse to medium grained stylolitic sandstone. Few siltstone beds in upper 4 ft.
519-4	Dark grey siltstone.
521-10	Light grey claystone
524-6	Fine grained sandstone

529 - 5	Grey silty, shaly claystone
530 - 4	Light grey siltstone.
535 - 1	Black claystone, coaly partings at base.
541 - 2	Irregularly interbedded siltstone and fine grained sandstone.
541 - 8	Coal and bone.
549 - 4	Black claystone grading to silty claystone.
559 - 3	Dark grey siltstone, beds of fine sandstone.
590 - 10	Medium grained stylolitic sandstone.
599 - 6	Interbedded siltstone and fine grained sandstone.
600 - 2	Bone
607 - 4	Black silty claystone. Plant fossils
608 - 0	Coal, bone and shale.
611 - 4	Carbonaceous shale
617 - 9	Interbedded siltstone and fine grained sandstone
621 - 4	Fine grained stylolitic sandstone.

Bottomed at 621-4

DDH # 15

0-47-2	Surficial material
53 - 6	Grey silty claystone.
67 - 3	Dark, grey, silty, shaly, claystone.
69 - 8½	Coal LOWER BAKERSTOWN
89 - 3	Dark grey silty bastard clay grading to light grey silty claystone, limey pellets and stringers.
100 - 2	Grey and green claystone and clay, red mottling. Few siderite stringers.
104 - 11	Light green interbedded siltstone, silty claystone and fine grained sandstone.
111 - 10	Medium grained sandstone.
124 - 9	Light green silty, shaly claystone. Interbedded siltstone and fine grained sandstone.
133 - 8	Grey silty claystone, limey pellets and inclusions.
135 - 10	Interbedded green siltstone and fine grained sandstone.
152 - 4	Light green fine grained sandstone.
158 - 6	Interbedded siltstone and fine grained sandstone.
170 - 9	Interbedded siltstone, silty claystone and fine grained sandstone.
179 - 8	Dark grey, silty, shaly claystone.
193 - 6	Black shaly claystone Marine fossils.
195 - 2	Coal BRUSH CREEK
200 - 3	Dark grey silty claystone, limey pellets and inclusions.
202 - 8	Fine grained sandstone, limey pellets and inclusions.
218 - 2	Interbedded siltstone, silty claystone and fine grained sandstone.
222 - 3	Irregularly interbedded siltstone and fine grained sandstone.
229 - 4	Grey silty claystone grading to green claystone.

232-4	Green fragmental claystone.
249-10	Green silty claystone, interbedded siltstone and fine grained sandstone.
251-1	Fragmental tan semi-flint clay, green claystone matrix.
257-2	Grey claystone, red mottling.
275-3	Interbedded silty claystone, siltstone, and fine grained sandstone.
281-3	Light, grading to dark grey shaly claystone. 3" siderite nodule at 280-4
285-0	Light grey silty claystone. 4" siderite nodule at base.
297-6	Light grey shaly siltstone, interbedded silty claystone and fine grained sandstone.
299-5	Interbedded siltstone and fine grained sandstone.
304-10	Dark grey siltstone, interbedded silty claystone and fine grained sandstone
313-0	Interbedded siltstone and fine grained sandstone.
315-8	Dark grey silty claystone Plant fossils.
317-6	Interbedded siltstone and fine grained sandstone.
319-0	Medium grained sandstone
321-0	Dark grey siltstone, fragmental in lower foot with sandstone matrix
327-4	Fine grained stylolitic sandstone.
331-3	Coal · FREEPORT
336-1	Grey limey claystone, limey pellets.
338-11	Fragmental blue-grey and tan flint clay.
343-11	Light, grading to dark grey claystone.
355-0	Interbedded siltstone and fine sandstone Siderite stringers thruout

Bottomed at 355-0

Hole #16

24 - 9	Surficial material
33 - 10	Interbedded siltstone, silty claystone, and fine grained sandstone.
41 - 0	Grey silty claystone.
46 - 9	Core loss.
74 - 0	Grey and greenish grey silty claystone, red mottling. Limey stringers and pellets.
87 - 10	Light grey siltstone. Limey stringers.
93 - 3	Light grey silty claystone.
95 - 0	Core loss.
98 - 3	Dark grey claystone.
118 - 2	Black shaly claystone. Marine fossils.
119 - 7	Coal HARLEM
140 - 5	Light grey limey claystone grading to claystone. Limey lenses and pellets.
172 - 8	Light green claystone, red mottling. Numerous large limey pellets
189 - 1	Interbedded light green siltstone, silty claystone and fine grained sandstone.
190 - 2	Claystone - olive with dark grey streaks.
198 - 11	Interbedded siltstone, silty claystone, and fine grained sandstone
200 - 8	Dark grey to black claystone.
201 - 3	Bone UPPER BAKERSTOWN
213 - 9	Light to dark grey claystone. Limey pellets, lenses and inclusions.
215 - 4	Light green fragmental claystone.
233 - 9	Dark grey shaly claystone grading to black clay shale.
235 - 7	Coal LOWER BAKERSTOWN
261 - 1	Dark grey claystone
267 - 4	Light, greenish-grey, silty, shaly claystone.

273-2	Medium grained sandstone. Green claystone, red mottling. Limey lenses and pellets.
295-5	Shaly interbedded light green siltstone, silty claystone and fine grained sandstone.
309-2	Grey and green claystone, red mottling. Limey pellets.
313-3	Interbedded siltstone and fine grained sandstone.
325-5	Medium grained sandstone.
347-0	Interbedded siltstone and fine grained sandstone grading to silty shaly claystone.
368-0	Black clay shale. Marine fossils.
369-10	Coal BRUSH CREEK
372-2	Interbedded siltstone and fine grained sandstone.
387-0	Grey claystone and limey claystone. Limey pellets stringers and inclusions.
402-8	Interbedded siltstone, silty claystone and fine grained sandstone.
414-1	Dark grey grading to green silty claystone. Limey pellets, stringers and inclusions.
427-1	Interbedded siltstone, silty claystone and fine grained sandstone. Limey lenses and pellets.
435-4	Light grey and green claystone. Silty streaks.
463-2	Interbedded siltstone, fine grained sandstone and silty claystone.
469-10	Black clay shale grading to silty claystone.
471-2	Coal

473-7	Black silty claystone.
484-3	Interbedded siltstone and fine grained sandstone.
487-6	Coal UPPER FREEPORT
491-4	Dk. grey siltstone
508-2	Grey limey claystone. Beds and lenses of argillaceous limestone.
511-3	Fragmental grey and brown flint clay
512-9	Calcareous sandstone, Tan claystone matrix.
514-8	Light tan fragmental flint clay
524-5	Light grey silty claystone grading to siltstone.
554-3½	Interbedded siltstone and fine grained sandstone.
558-3	Coal
567-10	Black silty claystone. Light grey claystone fragments at base.
578-7	Interbedded siltstone and fine grained sandstone.
581-8	Light grey claystone grading to siltstone.
595-8	Interbedded siltstone, silty claystone, and medium grained sandstone.
596-6	Coal
616-6	Interbedded siltstone and fine grained sandstone.
617-11	Coal and bone.
638-8	Interbedded siltstone and fine grained sandstone.
668-11	Medium to coarse grained stylolitic sandstone.
669-3	Bone.
683-1	Light grey silty claystone. Streaks and beds of fine grained sandstone.
686-10	Black shaly claystone. Locally carbonaceous shale.

691-4	Interbedded siltstone and fine grained sandstone.
692-8	Black silty clay shale. Plant rootlets
699-4	Light grey claystone grading to silty claystone.
718-11	Interbedded siltstone and fine grained sandstone.
720-8	Medium grained stylolitic sandstone.
722-5	Core loss (Mt. Savage Coal)
728-3	Grey silty claystone.
730-0	Tan and mahogany brown flint clay
738-0	Light, grading to dark grey silty claystone.
740-6	Interbedded siltstone and fine grained sandstone.
746-0	Black clay shale. Plant fossils.
746-8	Dark grey claystone.
750-2	Interbedded siltstone and fine grained sandstone.
753-2	Dark grey to black silty claystone.
757-9	Interbedded siltstone and fine grained sandstone
782-1	Medium grained stylolitic sandstone.
789-5	Black silty clay shale, Siderite nodules in upper part.
792-6	Fine grained sandstone
797-5	Black clay shale. Sandy beds in upper two feet
800-0	Coal
807-0	Black silty claystone.

Bottomed at 807

Hole #17	Elevation 2345
24 - 0	Surficial material
31 - 7	Grey silty claystone
40 - 2	Interbedded siltstone and fine grained sandstone
65 - 9	Fine, grading to coarse grained stylitic sandstone
66 - 10	Black claystone
71 - 0	Grey limey claystone. Limey lenses and pellets
75 - 0	Grey silty claystone. Limey pellets and inclusions.
77 - 2	Grey, silty, semi-plastic clay
91 - 0	Light grey silty claystone grading to siltstone. Siderite stringers thruout.
125 - 4	Interbedded light grey grading to black siltstone and fine grained sandstone.
128 - 6	Medium grained sandstone.
129 - 7	Coal
145 - 6	Grey limey claystone, Limey pellets and inclusions.
157 - 0	Green claystone. Limey pellets and inclusions. Siderite stringers thruout lower 3 ft.
171 - 3	Grey and greenish grey silty claystone, locally shaly. Few siderite stringers.
183 - 5	Shaly interbedded siltstone, silty claystone and fine grained sandstone.
196 - 3	Fine grained sandstone, fragmental siltstone in lower part.
203 - 3	Dark to light grey silty claystone.
214 - 1	Interbedded siltstone and fine grained sandstone. Limey stringers.
223 - 10	Coarse grained stylitic sandstone.
235 - 9	Grey silty claystone, locally shaly. Limey lenses.
258 - 4	Black clay shale. Marine fossils
260 - 0½	Coal HARLEM
264 - 5	Light grey. Argillaceous limestone.

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272-0	Green claystone. Limey pellets and lenses.
277-0	Light grey argillaceous limestone
282-7	Greenish grey limey claystone. Limey pellets lenses and inclusions.
288-6	Grey claystone, greenish grey mottling and streaking.
299-1	Green limey claystone grading to claystone.
304-7	Grey and green claystone. 3" siderite nodule at base
314-8	Light green, shaly interbedded silty claystone and fine grained sandstone.
327-10	Green, silty shaly claystone. Limey stringers pellets and lenses. Interbedded fine grained sandstone.
332-1	Grey claystone Limey lenses and inclusions.
334-0	Black silty claystone. Coaly partings at base.
335-8	Coal
351-8	Grey silty claystone. Limestone beds, pellets, lenses and inclusions.
370-6	Dark grey, grading to black silty clay shale
372-8½	Coal
377-5	Grey silty claystone Limey pellets.
397-10	Shaly interbedded siltstone, silty claystone and fine grained sandstone
421-6	Grey grading to green claystone Red mottling. 2" siderite nodule at base.
437-4	Interbedded siltstone and fine grained sandstone. Few beds of shaly green claystone at 419'. Plant fossils.
440-11	Grey shaly siltstone grading to black clay shale containing marine fossils.

441 - 3	Coal
450 - 7	Grey silty claystone Limey pellets and inclusions.
489 - 8	Interbedded siltstone and fine grained sandstone.
510 - 9	Dark grey to black silty shaly claystone. Marine fossils.
512 - 5	Coal
521 - 11	Grey silty claystone. Limey pellets, lenses and inclusions.
536 - 6	Interbedded siltstone and silty claystone.
540 - 8	Grey silty claystone.
547 - 10	Interbedded siltstone, silty claystone and fine grained sandstone.
559 - 0	Grey claystone, red mottling.
589 - 5	Interbedded siltstone, silty claystone and fine grained sandstone. Shaly at base.
595 - 10	Black clay shale
596 - 2	Bone and shale
600 - 8	Grey siltstone.
603 - 4	Interbedded siltstone and fine grained sandstone.
610 - 3	Black shaly claystone. Interbedded siltstone and fine grained sandstone. Plant fossils.
612 - 3	Black clay shale. Plant Fossils.
619 - 3	Interbedded siltstone and fine grained sandstone. Plant fossils.
628 - 9	Black silty clay shale
632 - 5	Coal FREEPORT
640 - 8	Grey argillaceous limestone. Lenses of limey claystone.
644 - 3	Fragmental blue and tan flint clay. Silty in upper part.
646 - 3	Grey silty claystone.
646 - 11	Brown fragmental flint clay. Claystone matrix. Siderite in part.

651-1	Grey silty claystone grading to siltstone.
678-11	Interbedded siltstone and fine grained sandstone.
694-1	Coarse grained stylolitic sandstone.
695-11	Black silty clay shale grading to carbonaceous shale.
698-9½	Coal Upper Kittanning
699-9	Dark grey silty claystone. Plant rootlets.
700-1	Limey, silty claystone.
705-9	Grey silty claystone.
717-2	Silty shaly claystone. Interbedded siltstone and fine grained sandstone.
719-5	Dark grey irregularly interbedded silty claystone, claystone, and silty semi-plastic clay
725-1	Light grey siltstone and silty claystone
726-3	Black claystone, locally carbonaceous.
734-5	Interbedded grey silty claystone and siltstone.
735-5	Bone
743-0	Medium grained sandstone. Some interbedded siltstone.
745-9	Interbedded siltstone and silty claystone
748-4	Dark grey silty clay shale. Plant fossils.
749-8	Coal and bone.
752-6	Medium grained stylolitic sandstone.
753-3	Coal
767-8	Grey silty claystone.
772-0	Medium grained sandstone.
775-8	Dark grey silty shaly claystone.
776-3	Coal and bone
777-2	Grey silty claystone
784-6	Medium grained stylolitic sandstone.
789-0	Interbedded siltstone and fine grained sandstone
790-0	Dark grey silty clay shale. Plant Fossils.

793-4	Coal
795-6	Tan silty semi-plastic clay. 2" of flint clay at base.
800-0	Interbedded siltstone and fine grained sandstone.
803-11	Black claystone
804-3	Coal
810-4	Light grey silty claystone
819-6	Interbedded siltstone and fine grained sandstone
826-6	Dark grey to black silty, shaly claystone. 10" siderite nodule at 821-10
834-6	Dark grey silty claystone.
844-1	Interbedded siltstone and fine grained sandstone.
845-6	Coal
847-7	Dark grey claystone grading to semi-plastic clay.
853-7	Interbedded siltstone and fine grained sandstone
856-9	Gray claystone, shaly in upper part.
858-8	Interbedded siltstone and fine grained sandstone.
862-2	Black shaly claystone
862-7	Coal
864-2	Black shaly claystone
868-6	Black silty claystone grading to siltstone.
883-8	Fine grained stylolitic sandstone.
890-4	Dark grey to black silty shaly claystone Plant fossils.
894-0	Interbedded siltstone and fine grained sandstone.

Bottomed at 894'

Elevation 2621

Hole #18	
0 to 18	Surficial material
19 - 0	Fine grained sandstone
22 - 0	Grey silty claystone. Interbedded siltstone and fine grained sandstone
32 - 9	Grey claystone.
52 - 0	Greenish grey silty claystone, red mottling. Limey stringers.
53 - 10	Dark grey claystone.
77 - 0	Light grey siltstone.
79 - 3	Interbedded siltstone and silty claystone.
110 - 11	Dark grey silty claystone grading to black clay shale. Marine Fossils
112 - 4	Coal HARLEM
134 - 0	Grey limey claystone. Lenses and pellets of argillaceous limestone.
157 - 6	Grey and green claystone and silty claystone, red mottling. Limey pellets and stringers.
172 - 0	Grey silty claystone, some interbedded siltstone. Limey stringers.
185 - 5	Interbedded siltstone and fine grained sandstone.
189 - 6	Grey silty claystone, some interbedded siltstone.
194 - 0	Medium grained sandstone
198 - 3	Dark grey silty claystone.
199 - 9	Shale and bone. UPPER BAKERSTOWN
213 - 5	Grey claystone and limey claystone. Limey stringers and pellets and inclusions
218 - 5	Blueish grey shaly claystone.
235 - 7	Interbedded siltstone, silty claystone and fine grained sandstone.
238 - 2	Dark grey silty shaly claystone.
240 - 5	Coal LOWER BAKERSTOWN
243 - 2	Grey, silty semiplastic clay.
244 - 3	Grey limey claystone. Limey pellets

252-1	Interbedded siltstone and fine grained sandstone Limey stringers.
268-11	Grey and green claystone, red mottling.
278-0	Interbedded siltstone, fine grained sandstone and greenish grey silty claystone.
285-4	Red and green silty shaly claystone.
288-8	Grey silty claystone grading to siltstone Limey pellets and inclusions.
294-8	Red and green silty claystone. Limey pellets and stringers.
303-0	Medium grained sandstone.
309-2	Interbedded siltstone and fine grained sandstone.
324-3	Grey silty shaly claystone, sandy streaks.
329-11	Dark grey shaly claystone, plant fossils
344-5½	Black shaly claystone, Marine fossils.
345-8	Coal BRUSH CREEK
375-0	Dark grey silty claystone, locally limey; Limey beds, pellets and inclusions.
382-3	Green silty shaly claystone, Two siderite nodules at base.
384-5	Grey, fine grained sandstone.
386-8	Interbedded green silty claystone and fine grained sandstone.
396-0	Green claystone, red mottling.
400-2	Greenish fragmental claystone & semi-flint clay.
417-3	Grey and green silty claystone, shaly in upper part. Siderite zones thruout.
418-9	Fragmental green claystone and semi-flint clay.
433-2	Interbedded siltstone, silty claystone and fine grained sandstone.
435-0	Dark grey silty claystone. Carbonaceous partings.
439-5	Grey silty claystone, interbedded fine grained sandstone, Carbonaceous partings at base.

445.4	Grey silty claystone grading to siltstone.
480-3	Interbedded siltstone and fine grained sandstone.
522-4	Medium to coarse grained sandstone. One foot siderite beds at 503-6 and 512-8
523-8	Black claystone
537-0	Dark grey limey claystone, beds and pellets of argillaceous limestone
538-4	Light tan, fragmental semi-flint clay. Claystone matrix.
540-7	Dark grey silty semi-plastic clay. Limey pellets.
544-5	Interbedded siltstone, silty claystone and fine grained sandstone.
547-0	Dark grey silty shaly claystone.
550-10	Coal
554-0	Dark grey siltstone.

Bottomed at 554' 0"

Hole #14 CB	Elevation 2528
10 - 0	Surficial material
41 - 1	Interbedded siltstone, silty claystone and fine grained sandstone. Limey pellets and inclusions.
42 - 2	Bone
63 - 5	Dark grey silty claystone, limey pellets and lenses. 8" siderite nodule at 11' - 8'. Small siderite nodules in lower 2'.
77 - 1	Interbedded siltstone and fine grained sandstone. Limey pellets in lower 2'.
105 - 7	Medium to coarse grained sandstone.
116 - 8	Grey argillaceous limestone.
132 - 4	Grey silty claystone grading to siltstone. Limey stringers and lenses
153 - 9	Interbedded dark grey siltstone and fine grained sandstone.
164 - 6	Medium to coarse grained micaceous sandstone, siltstone fragments in lower foot.
165 - 2	Bone
173 - 0	Dark grey argillaceous limestone.
187 - 9	Dark grey silty claystone. Limey lenses and pellets.
191 - 6	Grey, silty, shaly claystone.
192 - 0	Bone
215 - 9	Light to dark grey silty shaly claystone some interbedded fine grained sandstone
216 - 6	Coal
221 - 1	Dark grey argillaceous limestone.
237 - 0	Grey limey claystone grading to claystone. Limey pellets and lenses.
249 - 0	Grey silty shaly claystone.
257 - 5	Interbedded siltstone and fine grained sandstone.
260 - 2	Medium grained sandstone

270-0	Dark grey grading to black silty claystone Plant fossils.
270-7	Bone
278-2	Grey silty claystone locally [illegible] Limey pellets and inclusions.
287-3	Interbedded siltstone and fine [illegible] sandstone.
315-9	Coarse grained sandstone
338-7	Black shaley claystone Marine Fossils
340-11½	Coal HAYLEN
352-0	Grey argillaceous limestone
354-0	Dark grey silty claystone, limey pellets and inclusions.
369-6	Light and dark grey fragmental claystone. Fragments are flattened and twisted.
374-1	Green silty claystone. Limey pellets in lower half
411-6	Grey and green silty claystone limey stringers, pellets and lenses.
414-4	Interbedded grey silty claystone and siltstone.
421-[illegible]	Bone and shale
427-[illegible]	Grey limey claystone, limestone [illegible] and lenses.
441-8	Grey silty shaly claystone
454-7	Interbedded siltstone and fine grained sandstone grading to black [illegible] shale
456-10	Coal LOWER BAKERSTOWN
464-9	Grey, silty, semi-plastic clay
483-2	Grey, silty, shaly claystone, some interbedded fine grained sandstone.
496-2	Grey and red claystone, some limey pellets and lenses.
513-4	Interbedded siltstone and fine grained sandstone
520-0	Grey silty shaly claystone
523-0	Black shaly claystone. Marine Fossils.

54[illegible] 0	Grey silty claystone, limey pellets.
551-6	Interbedded siltstone and [illegible] sandstone.
569-7	Grey shaly siltstone
57[illegible]	Black silty clay shale Marine Fossils.
59[illegible]-3	Coal BRUSH CREEK
599-6	Grey silty claystone limy pellets And inclusions.
604-7	Grey argillaceous limestone
612-3	Grey silty claystone
617-9	Interbedded siltstone and fine grained sandstone
626-1	Grey claystone.
662-0	Grey [illegible]
667-4	Fragmental tan [illegible] clay Matrix of siderite claystone
67[illegible]-6	Grey silty shaly claystone, [illegible] interbedded siltstone and fine grained sandstone.
624-8	Interbedded siltstone and fine grained sandstone.
641-8	Black shaly claystone
643-9	Coal and shale
645-4	Black silty claystone
69[illegible]-3	Interbedded siltstone and fine grained sandstone.
703-6	Black clay shale
[illegible]	UPPER FREEPORT
[illegible]	[illegible] silty claystone, limy [illegible]
719-10	Fragmental tan claystone and silty flint clay
727-7	Grey silty claystone [illegible]
745-6	Interbedded siltstone and fine grained sandstone.
773-2	Medium grained sideritic sandstone
775-10	Interbedded fine grained sandstone and black siltstone

711-7 to 713-0	Coal. Black shale, [illegible] claystone fragments. Sideritic in lower part.
	Bottomed at 713-0
Clays -	Bolvar.
713-3 to	719-10

Depth	
19 - 0	Surficial material.
74 - 9	Medium grained sandstone
[illegible]	[illegible] silty claystone [illegible] up to 5"
92 - [illegible]	Interbedded [illegible] claystone
97 - [illegible]	Coarse grained [illegible]
111 - 4	Dark grey silty claystone [illegible]
122 - 0	Interbedded [illegible] silty [illegible] fine grained sandstone
123 - 10	Olive grading to black shaly claystone
125 - [illegible]	Coal
134 - 4	Black silty claystone grading to light grey siltstone.
153 - 0	Interbedded siltstone and fine grained sandstone.
164 - 11	Medium grained stylolitic sandstone
176 - 3	Interbedded siltstone and fine grained sandstone.
177 - 10	Black claystone. Plant [illegible]
178 - 10	Coal
181 - 7	Black silty claystone. Plant [illegible]
183 - [illegible]	Coal
190 - [illegible]	Tan claystone and silty [illegible]
191 - 4	Light and dark tan [illegible] semi [illegible] semi [illegible] clay siderite pellets [illegible]
[illegible] - 1	Tan claystone and silty semi [illegible]
[illegible] - 9	[illegible] tan [illegible] clay.
[illegible] - 0	Interbedded [illegible] and silty [illegible]
[illegible] - 1	Medium grained stylolitic sandstone.
[illegible] - [illegible]	Brown silty claystone
[illegible] - 0	Interbedded siltstone and [illegible] sandstone.
[illegible] - 7	Carbonaceous shale
[illegible] - [illegible]	Coal and shale

296-6	Grey grading to tan silty claystone
297-9	Medium grained sandstone
300-0	Grey shaly claystone grading to black clay shale.
300-11	Tan claystone.
308-4	Interbedded siltstone and fine-grained sandstone.
309-3	Bone and carbonaceous shale.
316-5	Tan fragmental claystone and semi-plastic clay.
331-8	Medium grained sandstone, interbedded siltstone in lower foot
332-7	Grey and tan claystone
338-0	Medium grained sandstone, interbedded siltstone at base.
341-7	Shaly interbedded siltstone and fine grained sandstone. grading to black shaly claystone.
344-11	Coal
349-4	Brown silty claystone grading to siltstone.
367-9	Medium grained sandstone.
372-0	Coarse, conglomeritic, stylolitic sandstone.
388-8	Medium grained sandstone.
394-11	Dark-grey, silty, shaley claystone.
409-10	Medium to coarse grained sandstone, locally conglomeritic.
415-7	Interbedded siltstone and fine grained sandstone. fragmental in lower foot
419-9	Coarse grained sandstone.
422-10	Black and tan claystone grading to siltstone
431-0	Interbedded siltstone and fine grained sandstone.
437-0	Tan, silty, semi-plastic clay grading to siltstone.

Bottomed at 437-0.

Hole #21 C.B	Elevation
12 - 0	Surficial material.
60 - 4	Interbedded siltstone and fine grained sandstone
81 - 1	Grey and greenish grey silty claystone Limey pellets and lenses.
106 - 9	Interbedded siltstone and fine grained sandstone.
110 - 6	Fine grained sandstone
124 - 8	Grey silty claystone, limey inclusions.
140 - 0	Greenish fine grained sandstone. Some interbedded green siltstone Limey stringers in upper 2 ft.
157 - 7	Green silty claystone, some interbedded fine grained sandstone in upper part.
185 - 0	Black shaley claystone Marine fossils
186 - 11	Coal HARLEM
209 - 8	Grey limey claystone, limey pellets.
218 - 0	Grey and red claystone.
223 - 8	Greenish grey and red limey claystone
231 - 9	Green silty claystone, limey stringers.
242 - 6	Green silty claystone, interbedded siltstone and fine grained sandstone Limey stringers and pellets.
245 - 6	Green silty claystone, limey stringers
262 - 1	Shaley interbedded siltstone, silty claystone, and fine grained sandstone. Few limey stringers.
263 - 5	Black clay shale
264 - 6	Fine grained sandstone, fragments of black clay shale.
270 - 7	Grey shaley claystone, interbedded siltstone and fine grained sandstone
272 - 3	Coal UPPER BAKERSTOWN
275 - 0	Grey limey claystone, large limey pellets.
276 - 10	Grey grading to black silty claystone.
282 - 5	Grey limey claystone, limey pellets.

285-9	Grey silty claystone and chalky grey silty semi-plastic clay. Limey pellets
297-3	Grey silty shaley claystone. 3" limey lense at base.
307-2	Shaley interbedded siltstone and fine grained sandstone grading to black silty clay shale
311-5	Coal - LOWER BAKERSTOWN
315-5	Grey silty semi-plastic clay
321-0	Grey silty, limey claystone, limey pellets.
320-0	Shaley interbedded siltstone, silty claystone and fine grained sandstone
341-0	Dark grey grading to light greenish grey silty claystone. Red mottling. Limey stringers.
350-8	Interbedded siltstone and fine grained sandstone
364-6	Grey silty shaley claystone.
365-0	Irregularly interbedded limestone and greenish shale. Limestone masses with marine fossils.
367-0	Grey silty shaly claystone.
393-4	Interbedded siltstone and fine grained sandstone. Limey in upper three feet.
415-5	Light grading to dark grey silty shaley claystone
429-2	Black clay shale - Marine Fossils.
430-6	Coal - BRUSH CREEK
436-0	Black to grey siltstone, interbedded sandstone in basal foot.
443	Shaley claystone grading to silty claystone with limey nodules
449-9	Dense grey fine grained sandstone, calcareous.
467-4	Dark grey silty clay and claystone, limey nodules.
476-6	Grey silty claystone becoming shaley

	downward
481	Greenish gray sideritic siltstone
492-6	Interbedded gray siltstone and sandstone
496-10	Silty claystone and semiplastic clay
504-7	Interbedded siltstone and fine sandstone.
507-7	Gray silty clay and claystone with ironstone concretions
515	Gray shaley siltstone, sandy streaks
517-4	Fine sandstone, silty streaks
532-8	Gray to black carbonaceous shale, silty at top.
533-10	Coal - UPPER FREEPORT RIDER
536-2	Carbonaceous claystone, streaks of coal.
538-9	Interlaminated dark shaley siltstone and white sandstone.
539-9	Black shale
542-4	Coal UPPER FREEPORT
546-7	Dense gray silty claystone, limey pellets in lower half.
563	Argillaceous siltstone; calcareous zones and limey pellets thruout
572-6	Argillaceous sandstone, minor siltstone, calcareous zones and limey pellets thruout.
574	Argillaceous limestone
578	Irony fragmental claystone and semiflint clay. (Light gray to brown gray. Iron — ferruginous stringers. Lith. CB211 upper foot, CB212, lower foot.)

586-6	Finely silty gray to green semiplastic clay.
589-4	Fragmental claystone, siltstone, and fine sandstone in siltstone matrix (Lith. CB 213)
589-8	Argillaceous limestone
605	Light and dark gray silty semiplastic clay grading to claystone (basal 4' fragmental claystone – Lith. CB 214 and CB 215)
611-10	Silty and sandy gray claystone
617-7	Sandstone, some interbedded siltstone.
623-7	Dark to carbonaceous silty shale, sandy in upper 1½'.
626-11	Coal
635-9	Dark and light gray silty claystone, 2' fragmental semiflint clay at base (Lith CB 216)
650-10	Interbedded siltstone and sandstone minor clay shale in middle part.
651-2	Carbonaceous shaley clay
656-11	Dark gray clayey siltstone
658-9	Gray clay shale grading to silty semiflint clay.
668	Interlaminated dark silty shale and light sandstone
670-2	Dark gray shale
671-0	Coal and bone
677-4	Dark gray to carb. clay shale

679-4	Coal
682-8	Gray to brownish silty claystone and fragmental claystone (Lith CB217).
693	Interbedded siltstone and fine sandstone.
724-8	Medium grained sandstone
727-4	Irregularly interbedded gray siltstone and fine sandstone. (inch zone of clay with coal flecks at 725-2)
736-2	Medium grained quartzitic, stylolitic sandstone.
746-4	Irregularly interbedded dark gray siltstone and fine sandstone
748-4	Dark gray semiplastic clay, coaly zone at top
749-11	Coal
752-7	core loss - driller says bone
758-7	Dark gray silty semiplastic clay. 3" sandstone at base.
758-9	Coaly bone
763-10	Gray silty semiplastic clay and claystone
766	Carbonaceous shale, coaly streaks.
769-6	Medium grained sandstone with carbonaceous partings
770	Coal
778	Gray to brownish silty claystone grading to siltstone
785-4	Interbedded siltstone and fine sandstone.

787-6	Dark to carbonaceous claystone, (6" zone of fragmental semiflint at base)
790-5	Dark to carbonaceous shaley claystone, 2" coaly bone at top.
792-2	Coal
799	Dark argillaceous siltstone grading to sandy siltstone.

Hole 22 CB.

0 to 18	Surficial material
25-7	Dark gray silty clay grading to shaley siltstone, sandy at base.
28-6	Gray to carbonaceous, pyritic, sandy shale
29-5	Coal
44	Gray calcareous clay becoming silty downward, zones of siltstone in lower 4'.
78-6	Interbedded shaley siltstone and fine sandstone
97-2	Medium-grained cross-laminated sandstone, coarse zones and coaly partings. Carbonaceous at base.
99-2	Calcareous silty clay
104	Argillaceous limestone
123	Calcareous silty clay, limestone inclusions
135-2	Greenish gray and gray silty clay and claystone. Irony nodules in upper part.
141-7	Interbedded siltstone and fine sandstone.
150-6	Gray silty shale and siltstone, carb shale inclusions in basal foot.
156-9	Silty clay grading to clayey siltstone
162-4	Silty gray clay, calcareous stringers
183	Fine-grained calcareous sandstone, interbedded siltstone in upper part
191-4	Silty gray shale
220-7	Black shale with marine fossils
222-4	Coal
248	Gray calcareous clay and claystone, limestone pellets and inclusions.
251	Mottled greenish gray and red shaley clay.
252-2	Dark gray to black shaley clay
254-4	Silty green claystone
257-6	Argillaceous limestone
269-2	Greenish gray silty clay, limey pellets in upper 2'3'.
273·6	Gray to dark gray semiplastic clay.

287-8	Greenish gray to gray shaley siltstone, calcareous in basal foot, minor shale at top.
290-5	Gray to black clay shale
295	Gray shaley siltstone, calcareous & pyritic zones
296-5	Black, pyritic silty claystone.
299-9	Coal UPPER BAKERSTOWN
303	Irregularly interbedded sandy claystone and pyritic argillaceous limestone.
305	Black pyritic silty clay
311-3	Silty clay and claystone, limey pellets
334-5	Gray and dark gray shaley siltstone and silty claystone
336-9	Dark gray silty shale
338-7	Coal LOWER BAKERSTOWN
346-6	Gray silty clay with 6" zone argillaceous limestone in middle part.
363	Gray silty shale, sandy in upper 4'.
373	Greenish gray and gray silty clay, siderite pellets. Locally calcareous.
377-8	Red and green claystone, limey zone in middle part.
383-4	Fine sandstone, zones sandy siltstone.
402	Interbedded shaley siltstone and fine sandstone
405-5	Black silty shale, calcareous nodules and marine fossils.
405-6	Coal
412	Gray silty clay, limey pellets
434	Greenish gray siltstone calcareous stringers, sandstone 430 to 433
451	Gray shaley siltstone grading to dark gray silty shale.
467-11	Black shale with calcareous nodules and marine fossils.
469-4½	Coal BRUSH CREEK
485	Silty gray clay and claystone, calcareous pellets and zones of argillaceous limestone.

499	Gray silty claystone and siltstone, zone of sandstone 489 to 491
506-6	Green siltstone with zones of calcareous sandstone
509-6	Fragmental sandy claystone and silty clay
529-8	Interbedded greenish gray siltstone and shaley siltstone, zones fine sandstone in upper half.
537-4	Gray silty claystone
558-6	Green to gray siltstone and shaley siltstone with fine sandstone in basal 4'.
567-4	Gray to dark gray shale
569-4	Dark gray to black clay, coaly partings in upper part
571-4	Carbonaceous shale
577-9	Irregularly interbedded dark gray siltstone and white sandstone.
590-2	Dark gray shale, sandy streaks
594-6	Coal UPPER FRELPORT
603-10	Argillaceous limestone and limey claystone.
607-10	Fragmental silty claystone
617-0	Light to dark gray tough silty clay
621-8	Gray semiplastic clay, zones of argillaceous limestone + ironstone.
631-2	Gray silty claystone grading to siltstone, sandy zones in basal 2'
652-10	Medium-grained quartzitic, stylolitic, sandstone.
655-10	Coal UPPER KITTANNING
660	Argillaceous limestone grading to limey claystone
662	Gray siltstone.

T.D. 662

Hole #23
CB

7 - 0	Surficial material
25 - 0	Largely washed. Ground down pieces of silty claystone, siltstone and sandstone.
35 - 0	Largely washed. Some [illegible] silty claystone.
45 - 4	Olive grey silty claystone.
47 - 2	Interbedded silty [illegible] and fine grained sandstone
[illegible]	Dark grey silty claystone
48 - 4	Bone and shale
62 - 10	Grey silty claystone. Small siderite nodules scattered throughout [illegible]
74 - 2	Interbedded siltstone and fine grained sandstone.
[illegible] - 0	Black shaley claystone
[illegible]	Grey silty shaley claystone.
1[illegible]2 - 3	Medium grained [illegible] stylolites. Large siderite nodule from 133-6 to 134-3
147 - 4	Interbedded siltstone and fine grained sandstone. Some silty claystone in lower part
150 - 7	Grey silty claystone
151 - 3	Carbonaceous claystone.
152	Coal
154 - 6	Washed
157 - 6	Dark grey silty claystone. Plant rectlets. Irregular cavities up to ½" in center
163 - 3	Gray silty claystone grading to siltstone. Locally fragmental. Dark brown claystone filling spaces between fragments
19[illegible] - 9	Interbedded siltstone and fine grained sandstone. Siderite stringers and pellets

194-5	Medium grained stylolitic sandstone. Fragments of grey and brown siltstone and claystone scattered thruout. One half-inch [illegible]
199-0	Interbedded siltstone and [illegible] sandstone.
201-10	Black silty clay shale.
203-4½	Coal.
207-6	Black siltstone and silty claystone. Some interbedded fine grained sandstone at center. Plant fossils.
209-6	Coal
214-5	Light gray and brownish gray claystone
215-2	Light tan plastic clay
215-4	Light tan flint clay. Few siderite nodules and lenses.
221-8	Light tan semi-plastic clay
226-11	Tan silty claystone grading to siltstone. Small siderite pellets scattered thruout upper part.
253-0	Interbedded siltstone and fine grained sandstone.
282-8	Medium to coarse grained stylolitic sandstone. Locally conglomeratic
296-1	Black shaley siltstone grading to dark grey silty claystone. Plant fossils.
302-3	Brownish grey siltstone.
315-2	Fine to medium grained stylolitic quartzitic sandstone. Pyrite nodules, streaks of carbonaceous claystone and coal in lower 2 feet.
330-8	Brown silty claystone and clay
333-0	Interbedded siltstone and fine grained sandstone
335-5	Black claystone

337-5	Coal
338-5	Black claystone. Coaly zones and fragments
344-7	Dark grey silty claystone grading to siltstone
360-2	Medium grained sandstone
364-4	Dark grey silty claystone. Plant fossils
374-4	Interbedded siltstone and fine grained sandstone.
376-7	Carbonaceous claystone. Coaly streaks.
380-9	Dark grey siltstone. Plant fossils
384-0	Fine grained sandstone. Minor interbedded brown siltstone

Bottomed at 384'

Hole #24 C.E.	
22 - 0	Surficial material
26 - 0	Greenish grey claystone
28 - 7	Dark grey silty claystone, siderite pellets and stringers.
44 - 11	Greenish grey silty shaley claystone Minor interbedded siltstone and fine grained sandstone.
46 - 9	Black clay shale
54 - 3	Grey silty, shaley claystone, locally siltstone. Few siderite nodules
56 - 7½	Coal UPPER BAKERSTOWN
58 - 11	Grey limey claystone, lenses of argillaceous limestone.
67 - 6	Grey to dark grey silty claystone Limey pellets and rich siltstone.
69 - 8	Grey limey claystone and argillaceous limestone.
76 - 7	Light grey claystone grading to silty claystone. Small siderite nodules scattered thruout.
95 - 8	Dark grey to black silty shaley claystone. Pyrite crystals in lower two feet.
97 - 4½	Coal LOWER BAKERSTOWN.
105 - 2	Dark grey silty clay grading to silty claystone. CONTAINING limey INCLUSIONS
120 - 5	Grey silty clay shale. Minor interbedded siltstone and fine grained sandstone.
122 - 3	Interbedded siltstone and fine grained sandstone.
134 - 0	Interbedded siltstone, fine grained sandstone and grey silty claystone.
140 - 9	Light grey and green claystone. Red mottling.

163-9	Interbedded siltstone and fine grained sandstone.
165-5	Black clay shale. Marine Fossils.
175-2	Dark to light grey silty claystone grading to siltstone. Limey lenses and pellets.
201-11	Interbedded siltstone and fine grained sandstone
205-5	Medium grained sandstone
215-0	Grey silty clay shale. Minor interbedded siltstone and fine grained sandstone in upper part. Local Fossils.
233-4	Black clay shale. Marine Fossils.
235-2	Coal BRUSH CREEK
245-9	'Grey limey claystone and' claystone. Limey pellets, lenses and inclusions.
257-0	'Light to dark' grey silty claystone. Siderite stringers in upper part.
274-7	Grey and greenish grey silty claystone Local sideritic zone thruout.
276-9	Fragmental green claystone. 'Claystone matrix'
287-8	Grey and green claystone. Red mottling.
299-9	Greenish grey silty shaley claystone 4" sideritic lense at 294-8.
319-0	Shaley interbedded siltstone, silty claystone and fine grained sandstone.
324-4	Dark grey to black silty shaley claystone
332-0	Grey silty claystone grading to siltstone.
352-2	Dark grey siltstone. Minor interbedded silty claystone and fine grained sandstone.
368-0	Irregularly interbedded siltstone and fine grained sandstone
369-6	Black silty clay shale.

378-10	Coal - UPPER FREEPORT
381-10	Grey argillaceous limestone 'Few lenses of limey claystone in lower part'
387-1	Tan and bluish grey fragmental [illegible] and semi flint clay
395-6	Grey silty claystone
400-1	Fine grained sandstone
413-2	Dark grey silty claystone
414-3	Dark grey siltstone Minor interbedded fine grained sandstone
414-8	Carbonaceous shale.
414-10	Bone.
416-10	Black to dark grey argillaceous limestone
418-9	Claystone: [illegible] fragmental, calcareous. Iron zone at base.
419-2	Dark grey silty [illegible] claystone.
422-5	Interbedded siltstone and fine grained sandstone.
424-0	Medium grained sandstone
	Bottomed at 424 feet.

Hole #25
C.B.

29 - 0	Surficial material
48 - 4	Light grading to dark grey silty shaley claystone
51 - 2	Black shaley claystone Plant fossils and scattered pyrite crystals.
52 - 10	Coal LOWER BAKERSTOWN
59 - 5	Dark grey claystone and clay. Limey pellets in lower part.
70 - 5	Interbedded siltstone and fine grained sandstone. Some silty claystone.
75 - 3	Grey shaley claystone. Sandy streaks.
77 - 2	Dark grey silty claystone.
89 - 8	Light grey and greenish grey claystone. Red mottling
103 - 3	Shaley interbedded siltstone, claystone, fine grained sandstone, and silty
103 - 10	Gray silty clay shale
107 - 10	Red silty clay shale
110 - 3	Grey silty shaley claystone [illegible] fine grained sandstone
110 - 4	Limey nodule containing marine fossils
116 - 5	Red and greenish grey claystone
137 - 0	Thinly, irregularly interbedded siltstone and fine grained sandstone
149 - 6	Interbedded siltstone and fine grained sandstone grading to silty shaley claystone with minor sandy beds.
171 - 6	Dark grey silty clay shale grading to black clay shale. Marine fossils.
172 - 7	Coal BRUSH CREEK
178 - 8	Interbedded siltstone and fine grained sandstone.
183 - 7	Grey silty claystone.
183 - 8	White crystalline limestone containing fragments of silty claystone and limey claystone. Vugs in the limestone

	contain rhombohedral calcite crystals.)
190-5	Dark grey silty claystone. Limey pellets and inclusions.
197-6	Interbedded siltstone, grey and greenish grey silty claystone and fine grained sandstone. Sideritic zones scattered thruout.
210-8	Grey silty claystone, sideritic lenses 1" 2" core loss
212-8	Fragmental green claystone
217-4	Grey silty claystone
224-3	Fine grained sandstone
232-7	Interbedded siltstone and fine grained sandstone. Two feet of silty claystone at center.
236-4	Fine grained sandstone
242-2	Grey siltstone grading to silty claystone.
245-0	Grey and greenish grey claystone and clay.
254-0	Interbedded siltstone and fine grained sandstone.
259-11	Grey silty clay shale.
260-3	Fragmental grey silty claystone. White soft clay matrix
262-6	Grey silty clay shale. One limey nodule at 262-0
266-9	Light grey claystone grading to siltstone. Few sandy streaks at base.
294-7	Interbedded siltstone and fine grained sandstone.
300-0	Medium grained stylolitic sandstone. Few silty streaks and fragments.
301-8	Coal

302-9	Black silty claystone
307-3	Dark grey argillaceous limestone
329-7	Dark grey silty claystone. Lenses and pellets of argillaceous limestone.
336-5	Bluish grey flint fragm. of claystone
337-6	Dark grey bastard clay.
348-4	Dark grey silty claystone. Plant rootlets at base.
352-7	Grey silty claystone grading to siltstone.
354-5	Medium grained sandstone. Minor interbedded siltstone
356-2	Interbedded siltstone and fine grained sandstone.
367-5	Medium grained sandstone. Silty streaks
368-6½	Coal
369-1	Dark grey silty claystone. Plant rootlets
406-8	Interbedded siltstone and fine grained sandstone
407-10	Dark grey ironstone.
425-7	Interbedded siltstone, locally becoming silty claystone, and fine grained sandstone. Plant fossils.
444-9	Dark grey to black silty shaley claystone Minor interbedded fine grained sandstone.
446-11	Medium grained stylolitic sandstone.
447-4	Coal
450-2	Light grey siltstone Irregularly intermixed fine grained sandstone.
471-6	Fine grained sandstone. Siltstone beds and fragments.
513-2	Medium grained stylolitic, quartzitic sandstone.
513-6	Hard, pyritic carb. shale.
517-11	Silty gray claystone grading to siltstone
521-8	Medium-to fine-grained sandstone
530-7	Gray shale, locally silty, siderite pellets throughout.
533-3	Carbonaceous clay shale
533-9½	Coal

535-7	Dark gray siltstone, shaley in lower part. Clay rootlets thruout.
536-4	Carb. shale with interlaminated sandstone
536-7	Coal and bone
540-5	Silty claystone, irregular patches fine sandstone
546-9	Fine ss grading to interbedded shaley siltstone and fine sandstone.
554-5	Gray silty 'shale', carb. shale and siderite nodule zones in lower half.
557-5	Coal Mt. Savage
562-1	Tan semiplastic clay and shaley clay, thin beds of flint clay and claystone (per Mr. Leg [illegible])
565-10	Dark gray to black siltstone with interlaminated fine sandstone.
569-4	Dark gray siltstone grading to gray shale.
571-[illegible]	Coal and bone
578-8	Gray siltstone, plant rootlets, shaley in lower part
580	Interbedded siltstone and fine sandstone.
605-4	Medium grained quartzitic, stylolitic, sandstone
608-9	Conglomerate, inclusions of coal at 606-6 to 608.
631	Medium grained stylolitic sandstone, some coarse zones.

T.D. 631

Hole # 26 CB	
0 to 27	Surficial material
34-10	Weathered clay and claystone, limey pellets in upper part.
39-9	Green-gray silty claystone grading to siltstone limey stringers and ironstone inclusions
58	Interbedded greenish-gray siltstone and silty shale (a few zones fine sandstone, limey)
62-4	Interbedded gray shale and argillaceous limestone
65-10	Irregularly interlaminated gray + black pyritic shale, coaly streaks.
68-7½	Coal LOWER BAKERSTOWN
71-6	Gray clay and claystone, limey nodules. (argillaceous limestone at top)
84	Interbedded dark gray clay, claystone, and argillaceous limestone.
92	Gray shaley claystone grading to shale, ironstone concretions in middle part.
108-6	Black shale, pyritic in lower part, ironstone concretions thruout.
110-3	Coal LOWER BAKERSTOWN
115	Dark to light gray clay and claystone, limey pellets
117-8	Silty claystone grading to siltstone
121-11	Fine grained sandstone
134	Interbedded siltstone and fine sandstone, (some claystone in lower part).
135-8	Mottled gray semi-hard clay
150-8	Mottled red and green semiplastic silty clay
152-8	Green silty, shaley claystone.
154-2	Argillaceous limestone
171-8	Interbedded siltstone and fine sandstone
172-6	Gray and tan shaley clay, scattered marine fossils (Pine Creek horizon)
179-9	Greenish semiplastic clay large inclusions of argillaceous limestone in upper 2'
[illegible] 2-6	Fine grained sandstone, minor siltstone.

226-1	Interbedded dark gray silty shale and siltstone. sandstone zones in upper 20'. Plant fragments.
245	Gray to black silty shale grading to carb. pyritic shale. Marine fossils and ironstone nodules thruout.
246-10	Coal BRUSH CREEK
248-7	Gray silty claystone, (locally finely fragmental)
255	Limey gray fragmental claystone, zones argillaceous limestone top + base.
258-3	Gray silty fragmental semiplastic clay.
266-1	Greenish-gray silty claystone, sideritic zones.
269	Fine grained sandstone
270-2	Shaley claystone
290	Interbedded gray + green semiplastic clays and claystones, some argillaceous limestone.
293	Green shaley siltstone
300-9	Mottled green red and gray silty semiplastic clay and claystone, (chiefly fragmental)
307-4	Greenish gray silty claystone grading to siltstone. Ironstone stringers and inclusions
317-2	Interbedded siltstone, fine sandstone + shale.
323-4	Fine grained sandstone, minor siltstone
325	Intermixed gray claystone, sandstone and siltstone.
330-6	Interlaminated dark and light gray clay shale
333-4	Gray claystone with veinlets of dark pyritic claystone, (some intermixed sand + coaly fragments.)
340-10	Silty brownish-gray claystone with zones of fine sandstone.
365-9	Interlaminated dark gray to black silty shale and white sandstone. (344-4 - coaly siltstone 346-2 to 346-8 carb clay)
367-1	Pyritic carb shale
370-11½	Coal UPPER FRELFORT
379-11	Argillaceous limestone.

383-5	Fragmental flinty claystone
389-6	Silty claystone grading to siltstone, zones of fine sandstone.
393-6	Semiplastic clay (fragmental in upper 14") grading to silty claystone.
406	Irregularly interbedded siltstone, silty claystone and fine sandstone (some limey-ironstone concretions in lower part)
406-5	Dark gray to black claystone
408-5	Argillaceous limestone.
410-6	Fragmental claystone and limestone with ironstone concretions.
418-4	Dark gray silty claystone
419-2	Fragmental claystone (2" limestone at base)
430-6	Interbedded fine sandstone and siltstone
432-1	Dark gray carbonaceous shale
435-7	Coal [illegible]
'438'	Argillaceous limestone
439-10	Fragmental claystone and argillaceous limestone, ironstone inclusions at base
443	Gray siltstone and silty claystone.

T.D. 445'

Hole #27 C.B.	
0 - 18	Surficial material
27 - 10	Grey silty claystone. Limey lenses and pellets
45 - 4	Greenish grey claystone. Siderite stringers in lower half.
59 - 6	Grey silty clay shale. Some interbedded limey sandstone
63 - 4	Black silty clay shale
65 - 0	Coal
68 - 6	Dark grey silty clay grading to light grey siltstone.
73 - 0	Interbedded siltstone and fine grained sandstone.
91 - 10	Fine to medium grained sandstone, locally limey.
95 - 0	Interbedded siltstone and fine grained sandstone.
105 - 7	Medium grained sandstone.
11 - - 6	Grey silty claystone. Numerous large limey lenses in lower part.
131 - 9	Black silty clay shale. Marine Fossils.
133 - 10	Coal HARLEM
139 - 9	Grey limey claystone, limestone pellets.
144 - 4	Grey argillaceous limestone.
155 - 1	Grey grading to green silty claystone. Limey nodules and siderite stringers.
160 - 6	Grey silty semi-plastic clay. Composed of squeezed and distorted sedimentary material.
161 - 8	Black shaley claystone.
177 - 0	Green claystone. Numerous large limey pellets. Some siderite stringers.
209 - 0	Greenish grey grading to grey silty shaley claystone. Interbedded siltstone and limey sandstone.
212 - 1	Grey siltstone

378-4	Black shaley claystone Marine fossils. BRUSH CREEK
379-8½	Coal BRUSH CREEK
388-3	Dark grey siltstone grading to silty claystone.
399-6	Dark grey silty claystone. Limey pellets.
410-1	Dark grey siltstone.
411-11	Green siltstone.
413-3	Fine grained sandstone.
416-9	Green silty claystone and light green siltstone.
419-10	Fragmental green claystone. Grey silty claystone matrix.
424-0	Grey grading to green silty claystone
439-0	Interbedded siltstone and fine grained sandstone.
447-4	Grey silty claystone. Locally layered tan and black in upper part.
453-1	Tan and bluish grey fragmental semi-flint clay.
475-3	Grey silty shaley claystone. Interbedded siltstone and fine grained sandstone.
477-7	Black clay shale
480-9	Black clay shale. Coaly partings.
485-0	Interbedded black siltstone and fine grained sandstone.
493-6	Dark grey silty clay shale
497-6	Coal
505-0	Dark grey argillaceous limestone. Brownish tan fragmental silty claystone.
549-6	Dark grey silty clay shale
550-6	Coal

551-8	Siderite nodules. Coaly and pyritic partings.
534-9	Irregularly interbedded siltstone and fine grained sandstone. Coaly partings near base.
555-7	Carbonaceous claystone
558.10	Coal
560-0	Dark grey silty claystone. Plant fossils.

Bottomed at 560'

23 2543
20 2502
21

212-9	Black silty claystone. Coaly lense at top.
213-9	Coal. Upper Bakerstown
215-10	Dark grey argillaceous limestone.
223-9	Dark grey silty claystone Lenses and pellets of argillaceous limestone.
227-5	Light grey silty clay
250-4	Light grading to dark grey silty clay shale.
252-7	Coal LOWER BAKERSTOWN
255-8	Dark grey silty clay
257-6	Fine grained sandstone
260-6	Interbedded siltstone and fine grained sandstone.
270-5	Light grey silty clay shale. Minor sandy beds.
272-0	Dark grey claystone grading to clay.
276-6	Very light grey semi-plastic clay.
285-3	Green silty claystone. Red mottling
290-5	Interbedded siltstone and fine grained sandstone
293-10	Fine grained sandstone.
310-10	Greenish grey grading to grey silty clay shale. Minor interbedded fine grained sandstone.
311-10	Dark grey grading to black clay shale. MARINE FOSSILS.
317-0	Light greenish grey claystone.
320-3	Green silty claystone. Limey stringers.
334-3	Fine grained sandstone. Minor interbedded siltstone. Limey in upper foot.
341-7	Interbedded siltstone and fine grained sandstone.
359-0	Grey shaley siltstone and silty claystone. Minor interbedded fine grained sandstone.

Hole #28 CB	
7 - 5	Surficial material
53 - 0	Medium grained sandstone.
71 - 5	Grey silty claystone, limey lenses and pellets. Scattered siderite nodules.
86 - 9	Light grey to dark grey silty clay shale. Minor interbedded fine grained sandstone in upper three feet
88 - 8	Bone grading to carbonaceous shale. Numerous pyrite layers thruout.
89 - 10	Coal
110 - 10	Grey silty claystone
126 - 2	Fine grained sandstone.
140 - 5	Interbedded siltstone and fine grained sandstone.
144 - 3	Fine grained sandstone.
151 - 0	Green claystone.
179 - 2	Interbedded siltstone and fine grained sandstone.
201 - 9	Black silty shaley claystone. Marine Fossils BRUSH CREEK
207 - 0	Grey silty claystone.
214 - 5	Interbedded siltstone and fine grained sandstone.
221 - 0	Green silty claystone Limey pellets.
224 - 6	Green silty claystone grading to siltstone. Limey stringers.
243 - 0	Interbedded green siltstone and fine grained sandstone
246 - 1	Fragmental green and red claystone.
253 - 5	Grey claystone and clay. Red mottling
260 - 5	Interbedded siltstone and fine grained sandstone.
262 - 4	Grey silty shaley claystone
263 - 5	Fragmental Light tan semi-flint clay Claystone matrix
266 - 3	Grey silty claystone.

334-11	Interbedded siltstone and fine grained sandstone. Siltstone fragments in lower three feet
382-11	Medium grained stylolitic sandstone.
399-6	Irregularly interbedded siltstone and fine grained sandstone.
401-11	Coal
427-4	Grey silty claystone grading to siltstone.
431-5	Interbedded siltstone and fine grained sandstone.
440-6	Black silty claystone, locally shaley
441-7	Coal
447-2	Black silty claystone. Plant fossils.
453-0	Grey siltstone. Minor interbedded fine grained sandstone.
457-3	Medium grained sandstone.
460-0	Interbedded siltstone and fine grained sandstone.
466-9	Dark grey grading to black silty clay shale.
468-6	Coal
478-7	Light grey finely silty semi plastic clay, locally fragmental
479-6	Fragmental grey and tan silty semi-flint clay.
480-1	Fragmental tan flint clay. Lith.
480-6	Olive brown silty claystone. Sandy stringers.
547-7	Fine to medium grained stylolitic sandstone. Locally quartzitic
455-6	Interbedded siltstone and fine grained sandstone.
559-10	Coarse grained stylolitic sandstone. Locally quartzitic.
560-1	Boney coal

560-7	Dark grey siltstone. Plant fossils.
561-1	Coal and bone
565-4	Dark brown finely silty semi-plastic clay.
566-3	Interbedded black siltstone and fine grained sandstone.
566-7	Carbonaceous shale Coaly partings
567-5	Black silty claystone. Plant fossils
589-7	Fine grained stylolitic quartzite.
599-0	Medium grading to conglomeritic quartzite!
599-6	Fine grained quartzite.
602-7	Dark grey siltstone
625-11	Medium grained stylolitic sandstone Locally quartzite
635-6	Stylolitic conglomerate
638-7	Interbedded siltstone and fine grained sandstone.
640-9	Conglomeritic sandstone.

Bottomed at 640' 9"

Hole #23 CB	
37 - 0	Surficial material
43 - 6	Weathered iron stained claystone
62 - 1	Medium to coarse grained sandstone.
74 - 0	Grey limey claystone
82 - 5	Grey silty claystone grading to siltstone
91 - 10	Interbedded siltstone and fine grained sandstone
104 - 1	Dark grey silty clay shale. Minor sandy beds.
106 - 0	Coal
110 - 11	Dark grey silty claystone. Plant fossils.
112 - 4	Coal
117 - 2	Dark grey argillaceous limestone.
124 - 0	Grey silty claystone becoming siltier downwards. Limey stringers
134 - 8	Interbedded siltstone and fine grained sandstone. Limey pellets
142 - 0	Grey and greenish grey silty claystone Limey lenses and pellets
146 - 5	Dark grey silty claystone. Minor interbedded fine grained sandstone in center.
170 - 1	Dark grey grading to black silty clay shale.
170 - 8	Coal
184 - 0	Grey limey claystone. Lenses and pellets of argillaceous limestone.
188 - 4	Green claystone. Limey pellets.
192 - 1	Interbedded siltstone, silty claystone and fine grained sandstone.
206 - 0	Olive grey and green silty claystone
217 - 6	Interbedded siltstone and fine grained sandstone.
220 - 4	Black silty claystone.

229-2	Grey silty claystone grading to green siltstone. Limey stringers
278-3	Fine grading to coarse grained sandstone.
293-8	Black shaley claystone Marine Fossils AMES
307-0	Grey limey claystone and argillaceous limestone.
324-7	Mottled light and dark grey silty claystone.
331-0	Grey and green claystone. Red mottling
337-3	Green and red limey claystone
346-3	Green and red claystone.
359-1	Interbedded siltstone and fine grained sandstone. Minor scattered limey pellets.
366-4	Green clay shale (Interbedded black shale layers near base)
373-2	Interbedded siltstone and fine grained sandstone.
377-4	Grey silty claystone Limey lenses
378-7	Mottled grey and black claystone Pyrite lumps throuout.
379-10	Carbonaceous claystone and bone
382-2	Grey limey claystone and argillaceous limestone.
399-8	Grey silty claystone. Scattered limey pellets.
418-8	Black shaley siltstone grading to black clay shale
421-2½	Coal LOWER BAKERSTOWN
433-3	Grey silty claystone, locally limey Limey pellets.
441-2	Green and red mottled claystone

456-6	Interbedded light green siltstone and fine grained sandstone. Nine inches of limey sandstone at base.
474-5	Grey silty clay shale
483-0	Green claystone, mottled red
487-0	Green silty shaley claystone
512.2	Interbedded siltstone and fine grained sandstone
519-0	Black silty clay shale Plant fossils.
538-1	Black shaley claystone. Marine Fossils.
539-5	Coal BRUSH CREEK
544-0	Grey siltstone
546.4	Grey limey claystone.
561-5	Grey silty claystone, few limey pellets.
577-6	Green claystone and silty claystone Nineteen inches of argillaceous limestone at base.
582-7	Fragmental grey claystone and semi-flint clay.
591-4	Grey silty claystone grading to siltstone.
600-0	Interbedded green siltstone and fine grained sandstone.
608-0	Grey claystone grading to green siltstone
618-5	Interbedded siltstone and fine grained sandstone
621-0	Fragmental green claystone and silty tan fragment plastic clay. Matrix of interbedded siltstone and fine grained sandstone.
635-2	Interbedded siltstone and fine grained sandstone. Locally frag.

641-6	Dark grey grading to black clay shale Plant fossils.
642-4	Carbonaceous shale Minor bone.
647-0	Black grading to dark grey silty claystone.
652-0	Evenly interbedded shaley siltstone and fine grained sandstone
658-9	Dark grey silty clay shale. Minor thin beds of fine grained sandstone. Plant fossils
662-3½	Coal UPPER FREEPORT
675-4	Grey silty claystone Limey lenses.
676-2	Fragmental blueish grey and tan flint clay.
695-10	Grey silty claystone Limey stringers.
705-4	Interbedded siltstone and fine grained sandstone.
726-8	Fine grading to medium grained stylolitic sandstone.
729-6	Coal
734-4	Dark grey silty claystone Limey pellets and inclusions.
737-0	Fragmental grey siltstone.

Bottomed at 737-0

CB
Hole #50

6-0	Surficial material
14-0	Medium grained sandstone.
28-0	Weathered soft grey silty clay
34-10	Grey siltstone. Minor fine grained sandstone.
42-10	Interbedded siltstone and fine grained sandstone
53-4	Fine grained sandstone. Few silty beds and fragments.
59-11	Interbedded siltstone and fine grained sandstone L.M.
82-6	Medium grained sandstone
125-7	Interbedded grey silty claystone, siltstone and fine grained sandstone.
146-9	Medium grained styolitic sandstone Coaly partings thruout.
157-4	Grey silty claystone grading to siltstone
163-2	Interbedded siltstone and fine grained sandstone
201-5	Medium grained styolitic sandstone.
202-0	Coal
213-1	Dark grey grading to black silty clay shale
215-1	Coal U.K.
237-3	Grey silty claystone, Siderite nodules and stringers. Shaley in lower two feet.
250-8	Medium to coarse grained styolitic sandstone.
251-10	Black siltstone.
253-0	Styolitic quartzite
261-6	Irregularly interbedded siltstone and fine grained sandstone.
269-1	Black silty clay shale
270-1	Styolitic quartzite
276-8	Dark grey silty claystone.

279-1	Bone and shale
281-9	Dark grey silty claystone.
284-7	Irregularly interbedded siltstone and fine grained sandstone.
287-2	Black shale, beds of fine grained sandstone, and bone.
331-4	Fine grading to medium grained stylolitic quartzite. Conglomeritic at base.
339-6	Interbedded siltstone and fine grained sandstone.
346-6	Medium grading to coarse grained quartzitic sandstone.
348-6	Grey silty claystone.
358-5	Medium grained grading to conglomeritic sandstone. Locally quartzite.
359-1	Grey silty claystone.
367-4	Conglomerate.
392-3	Medium grained sandstone
398-5	Interbedded siltstone and fine grained sandstone.
404-6	Grey shaley silty claystone. Minor interbedded fine grained sandstone at base.
407-0	Medium grained sandstone.
	Bottomed at 407-0

C.B.
Hole # 31

49 - 0	Surficial material
54 - 6	Grey silty claystone
65 - 7	Grey silty shaley claystone
67 - 2½	Coal
85 - 5	Dark grey silty claystone, locally shaley. Scattered beds of fine grained sandstone thruout.
86 - 8	Coal
92 - 7	Grey limey claystone. Limey pellets.
108 - 3	Green silty claystone. Limey pellets.
130 - 0	Green silty claystone, Shaley in lower part.
133 - 5	Fine grained sandstone.
136 - 10	Black silty clay shale. Few streaks of fine grained sandstone at top.
137 - 1	Bone
137 - 4	Carbonaceous shale
138 - 3	Bone.
145 - 1	Grey grading to green silty claystone. Few limey stringers.
178 - 5	Medium to coarse grained stylolitic sandstone
187 - 0	Grey siltstone. Minor irregular interbedded sandstone streaks.
189 - 2	Fine grained sandstone
205 - 0	Black silty shaley claystone. Limey pellets. Marine fossils. AMES
206 - 7	Coal HARLEM
210 - 5	Dark grey argillaceous limestone.

213 - 9	Greenish grey silty claystone Limey pellets and inclusions
221 - 11	Olive green claystone.
231 - 5	Dark red claystone.
243 - 9	Dark to light green claystone Limey pellets.
278 - 9	Interbedded green siltstone, silty claystone and fine grained sandstone.
281 - 3	Fine grained sandstone.
282 - 4	Interbedded siltstone and fine grained sandstone.
285 - 7	Grey claystone.
286 - 11	Carbonaceous shale, bone and coal. UPPER BAKERSTOWN
304 - 0	Grey silty claystone. Limey pellets and inclusions.
323 - 3	Dark grey silty clay shale.
325 - 4	Coal LOWER BAKERSTOWN
335 - 6	Grey silty claystone and silty semi-plastic clay.
336 - 8	Fine grained sandstone.
343 - 4	Shaley interbedded siltstone and silty claystone.
362 - 7	Grey green and red claystone and clay.
372 - 2	Interbedded siltstone and fine grained sandstone. Limey in upper two feet.
387 - 5	Green shaley siltstone grading to dark green shaley claystone.

388-7	Green [illegible] clay stone. Crustacean and pelecypods.
3[illegible]-2	Green clay stone limey pellets and inclusions.
314-1	Fine grained sandstone
323-5	Interbedded siltstone and fine grained sandstone.
3[illegible]-0	Dark grey siltstone grading to silty claystone. Plant fossils.
4[illegible]-6	Dark grey grading to black silty shaley claystone. Plant fossils.
45[illegible]-4	Coal BRUSH CREEK
4[illegible]-6	Grey silty claystone. Limey pellets.
478-4	Grey silty claystone grading to siltstone.
4[illegible]-0	Dark grey silty claystone and [illegible].
452-3	Green silty claystone. [illegible] in lower part.
495-3	Fragmental green claystone and silty claystone.
449-2	Olive green claystone.
502-4	Green shaley siltstone.
508-0	Interbedded green siltstone and fine grained sandstone.
510-4	Green silty shaley claystone.
518-0	Grey and green silty claystone.
534-7	Green silty shaley claystone.

536 -6	Fragmental tan claystone and semi-flint clay.
549 - 5	Interbedded green and grey siltstone and fine grained sandstone
554 - 4½	Dark grey silty clay shale with sandy streaks grading to carbonaceous shale.
560 - 8	Coal. UPPER FREEPORT SEAM
561 - 8	Grey silty claystone.
562 - 1	Carbonaceous shale
563 - 11	Dark grey silty claystone. Plant Rootlets.
569 - 4	Shaley interbedded siltstone and fine grained sandstone grading to dark grey silty clay shale.
572 - 3	Coal
574 - 6	Grey silty claystone.
5[illegible] - 10	Argillaceous limestone and limey claystone.
581 - 6	Fragmental tan [illegible] and semi-flint clay.
598 - 3	Light grey siltstone, [illegible] fine grained sandstone.
599 - 2	Fragmental tan siltstone grading to fragmental silty semi-flint clay.
602 - 6	Fragmental tan flint clay. Silty layers at top
616 - 1	Grey silty claystone.

618-1	Carbonaceous shale Coaly partings
624-8	Black grey silty claystone. locally shaley
643-5	Coarse grey conglomeritic stylolitic sandstone. Few siltstone beds and fragments at top
645-6	Coal UPPER KITTANNING
651-4	Grey silty claystone and siltstone
	Bottomed at 651' 4"

Hole #52
CB

33 - 4	Surficial material
71 - 10	Interbedded grey silty claystone and siltstone. Minor fine grained sandstone.
74 - 11	Coal UPPER BAKERSTOWN
81 - 6	Grey silty claystone lenses of argillaceous limestone.
91 - 0	Grey silty claystone, locally siltstone.
92 - 4	Grey claystone and clay
113 - 10	Light grading to dark grey shaley silty claystone.
115 - 10	Coal LOWER BAKERSTOWN
120 - 6	Grey silty semi-plastic clay.
123 - 0	Grey siltstone.
134 - 6	Medium grained sandstone Minor interbedded siltstone.
140 - 6	Silty clay shale
157 - 8	Greenish grey silty claystone Red mottling in lower part.
167 - 5	Interbedded siltstone and fine grained sandstone.
190 - 10	Dark grey silty shale, grading Minor interbedded siltstone and fine grained sandstone. Plant fossils.
218 - 0	Interbedded siltstone and fine grained sandstone. Plant fossils.

241-9	Black silty clay shale. Marine fossils
242-10	COAL BRUSH CREEK
244-8	Grey siltstone.
261-4	Light grey silty claystone and siltstone.
266-7	Green siltstone. Limey stringers at base.
277-10	Grey and green silty claystone.
288-4	Fragmental green claystone, siltstone and silty semi-flint clay
312-4	Green silty claystone, locally shaley.
317-7	Fragmental green claystone, silty claystone and semi-flint clay.
334-4	Green shaley siltstone and silty claystone. Minor interbedded fine grained sandstone.
339-9	Medium grained sandstone
340-7	Black shaley claystone, locally carbonaceous.
341-5	Boney coal
349-1	Light to dark grey shaley siltstone grading to black clay shale
350-11	Coal
363-0	Grey silty claystone
366-0	Fragmental grey and tan semi-flint clay
372-3	Light green claystone grading to silty claystone.

278-4	Greenish grey siltstone, sandy streaks.
408-6	Medium grained sandstone.
412-6	Black silty claystone.
418-9	Black carbonaceous shale. Locally bone.
421-10	Dark grey silty claystone.
423-11	Coal
446-0	Dark grey silty claystone.
468-11	Interbedded siltstone and fine grained sandstone.
470-6	Medium grained sandstone.
493-3	Black silty clay shale. Interbedded fine grained sandstone at top
496-11	Coal
512-5	Alternating and interfingering black silty claystone and tan silty clay.
521-0	Shaley interbedded black siltstone and fine grained sandstone.
525-4	Brown silty claystone and clay
527-8	Coal and bone.
535-3	Dark grey grading to light grey siltstone.
541-9	Fine grained sandstone, siltstone fragments and beds.
545-10	Black silty shaley claystone.
546-5	Boney coal

572-6	Dark grey silty shaley claystone grading to shaley siltstone.
575-3	Coarse grained sandstone.
577-6	Dark grey siltstone
629-6	Medium grained stylolitic sandstone, locally quartzite
639-0	Dark grey shaley siltstone Plant fossils.
645-6	Silty brown claystone, siltstone at base.
654-6	Black silty shaley claystone Coaly partings Plant fossils
684-0	Medium grained stylolitic sandstone.
	Bottomed at 684'

Hole #33 CB	
19-0	Surficial material
29-0	Grey siltstone grading to silty claystone.
44-5	Black silty claystone Marine fossils.
50-5	Coal
58-1	Grey silty claystone. Limey pellets.
59-6	Brown semi-plastic clay.
63-2	Greenish fine grained sandstone
79-5	Green claystone, siltier downwards.
80-9	Irregularly interbedded siltstone and fine grained sandstone.
82-7	Dark grey grading to green claystone
86-5	Fragmental green claystone and silty claystone.
99-0	Green silty claystone. Scattered minute [illegible]
100-5	Fragmental tan semi flint clay and green claystone.
107-0	Green claystone grading to siltstone.
119-9	Light grey siltstone
122-6	Fragmental green and tan claystone.
126-6	Greenish grey silty claystone
137-4	Interbedded siltstone, silty claystone and fine grained sandstone.

145-9	Dark grey grading to black silty shaley claystone.
146-8	Coal
161-0	Interbedded siltstone and fine grained sandstone. Plant fossils. Shaley in lower part.
166-1	Dark grey sandy claystone grading to silty carbonaceous shale
169-4	Coal UPPER FREEPORT
192-2	Dark grey argillaceous limestone and limey claystone
206-2	Grey claystone grading to green silty claystone.
227-8	Fine grading to medium grained sandstone.
228-10½	Coal
230-5	Dark grey claystone
232-0	Fragmental light grey claystone and semi-flint clay.
237-0	Siltstone

Bottomed at 237-0

Hole #34 CB	
26-0	Surficial material
140-6	Grey limey claystone, limey claystone.
54-2	Olive claystone limey pellets in upper part
55-0	Green and red claystone
56-6	Black to carbonaceous claystone Harlem?
67-9	Grey limey claystone
72-0	Mottled yellow green and olive claystone
105-0	Shaley interbedded siltstone and fine grained sandstone
106-6	Coal UPPER BAKERSTOWN
110-2	Dark grey argillaceous limestone
121-9	Black claystone grading to dark grey silty claystone limey pellets
126-6	Dark grey shaley claystone Siderite nodules.
140-5	Black shaley claystone
142-6	Coal LOWER BAKERSTOWN
151-6	Grey silty claystone, limey pellets
169-5	Interbedded siltstone, silty claystone and fine grained sandstone
185-1	Green and red claystone and clay
207-4	Interbedded siltstone and fine grained sandstone.

210-3	Black shaley claystone Marine fossils.
217-0	Grey silty claystone Limey pellets
221-6	Green silty claystone Limey pellets.
231-0	Siltstone
242-10	Interbedded siltstone and fine grained sandstone.
257-3	Fine grained sandstone
260-0	Grey siltstone
282-0	Black shaley claystone Marine Fossils!
283-7	Coal BRUSH CREEK
292-9	Grey silty claystone grading to siltstone Limey pellets.
300-5	Dark grey claystone grading to siltstone Limey pellets.
303-0	Fine grained sandstone
315-0	Grey silty claystone Few siderite nodules. Limey in lower foot.
319-0	Green silty claystone
321-6	Fragmental green claystone and tan semi-flint clay.
335-4	Green silty claystone Few sandy streaks
340-1	Fragmental tan claystone, silty claystone and tan semi-flint clay ~~Quartz~~ veinlets in lower foot

372-8	Medium grained sandstone.
385-7	Dark grey silty shaley claystone Plant fossils
393-6	Shaley interbedded siltstone and fine grained sandstone, plant fossils
400-4	Dark grey grading to black clay shale.
403-11	Coal
407:3	Argillaceous limestone
410-0	Grey silty claystone Limey pellets
414-10	Fragmental tan silty flint clay.
426-7	Greenish grey silty claystone grading to siltstone
439-1	Interbedded siltstone and fine grained sandstone.
461-4	Medium to coarse conglomeritic stylolitic sandstone
466-0	Dark grey siltstone
466-6	Carbonaceous shale
469-8	Coal
472-6	Argillaceous limestone and limey claystone
473-0	Grey siltstone.

Hole #35 CB	
27 - 0	Surficial material
41 - 2	Interbedded siltstone and fine grained sandstone
52 - 0	Dark grey silty claystone
62 - 2	Grey silty claystone limey lenses and pellets
68 - 6	Bluish grey claystone
7 - 6	Interbedded siltstone and fine grained sandstone
86 - 8	Black silty shaley claystone
89 - 7	Coal LOWER BAKERSTOWN
95 - 4	Grey silty semi-plastic clay
97 - 2	Green claystone limey pellets and stringers
102 - 4	Interbedded green siltstone and fine grained sandstone
145 - 10	Green silty shaley claystone Locally minor interbedded fine grained sandstone and mottling
146 - 4	Green silty claystone fragments of pink limestone Bryozoa fossils
161 - 4	Greenish fine grained sandstone
181 - 5	Interbedded green grading to grey siltstone and fine grained sandstone
205 - 10	Black silty shaley claystone Marine fossils
217 - 2	Coal BRUSH CREEK

217 - 0	Grey siltstone grading to fine grained sandstone. Plant [illegible] at top.
224 - 6	Grey limy claystone, [illegible] and [illegible] of argillaceous limestone. [illegible] grey silty claystone.
236 - 9	Interbedded green siltstone and fine grained sandstone.
240 - 10	Medium grained sandstone
249 - 0	Green claystone, locally fragmental
267 - 9	Fine grained sandstone, locally limey. Minor interbedded siltstone.
272 - 11	Dark and light grey silty claystone, locally fragmental
283 - 8	Green silty claystone.
284 - 6	Fragmental tan and blue flint clay.
288 - 6	Grey silty claystone grading to siltstone.
309 - 0	Interbedded siltstone and fine grained sandstone grading to dark grey silty shaley claystone. Minor interbedded fine grained sandstone
310 - 3	Black clay shale
311 - 11	Carbonaceous shale and bone.
318 - 5	Black silty clay shale. Plant fossils
323 - 5	Interbedded siltstone and fine grained sandstone. Plant fossils
326 - 6½	Coal Upper Freeport

343-4	Grey claystone, lenses and pellets of argillaceous limestone.
357-0	Grey shaley claystone grading to silty claystone. Limey pellets.
359-5	Fragmental claystone and semi-flint clay.
361-3	Brownish grey claystone
364-3	Fragmental blue gray and tan flint clay.
365-0	Siltstone.
369-5	Black clay shale
388-6	Medium to coarse grained stylolitic sandstone
408-0	Grey siltstone
421-0	Interbedded siltstone and fine grained sandstone
428-6	Grey clay shale
434-0	Interbedded siltstone and fine grained sandstone.

Hole #36

30 : 0	Surficial material
39 : 5	Greenish grey silty claystone
42 : 0	Fine grained sandstone. Interbedded siltstone at bottom
45 : 7	Grey siltstone and silty claystone
46 : 9	Black silty clay shale
47 : 11	Interbedded siltstone and fine grained sandstone Plant fossils
49 : 4	Bone
52 : 9	Grey silty claystone
63 : 7	Green silty claystone grading to siltstone Limey pellets.
80 : 6	Interbedded siltstone and fine grained sandstone.
106 : 2	Fine grading to medium grained sandstone.
125 : 2	Black shaley claystone, Marine fossils AMES
126 : 7	Coal HARLEM.
137 : 6	Argillaceous limestone and limey claystone with limestone pellets.
148 : 9	Grey siltstone grading to silty claystone Minute limey pellets
155 : 11	Green and red claystone
156 : 11	Black claystone.
179 : 0	Green silty claystone Lenses and pellets of argillaceous limestone.

189-0	Green silty shaley claystone, sandy streaks
203-6	Green interbedded siltstone and fine grained sandstone.
207-0	Dark grey silty claystone coaly partings at base.
208-7	Bone UPPER BAKERSTOWN
211-9	Argillaceous limestone
213-5	Dark grey silty claystone
223-8	Grey claystone and limey claystone Limey lenses and pellets.
243-1½	Dark grey grading to black silty clay shale.
245-1½	Coal LOWER BAKERSTOWN
251-0	Grey silty claystone
256-0	Fine grained sandstone
261-7	Interbedded siltstone and fine grained sandstone.
306-5	Green silty shaley claystone.
306-10	Green claystone, limey masses and fragments. Few pink limestone fragments. Marine fossils.
316-9	Green claystone, red mottling Few limey pellets.
337-5	Fine grained sandstone
335-0	Interbedded siltstone and fine grained sandstone.
358-10	Black silty clay shale. Plant fossils.

376-0	Black silty clay shale. Marine fossils.
378-0	Coal BRUSH CREEK
383-0	Interbedded siltstone and fine grained sandstone.
412-0	Grey silty claystone. Limey pellets.
416-6	Green claystone. Siderite stringers
418-7	Fragmental grey and green claystone
432-5	Greenish grey silty claystone. Shaley in lower half.
448-0	Grey grading to green claystone.
449-11	Fragmental greenish grey claystone
460-0	Grey silty shale.
466-0	Interbedded siltstone and fine grained sandstone.
469-10	Dark grey silty claystone.
470-6	Fine grained sandstone.
472-5	Dark grey silty shaley claystone
~~480~~	Plant fossils. Coal 480-1 to 480-10
500-3	Interbedded siltstone and fine grained sandstone. Plant fossils.
502-1	Black silty clay shale. Plant fossils.
506-3	Coal UPPER FREEPORT
510-7	Limey claystone, limey pellets.
533-10	Grey silty claystone
537-6	Blue and tan fragmental flint clay
540-2	Grey claystone
540-10	Carbonaceous claystone
544-11	Interbedded siltstone and fine grained sandstone.

552-6	Grey claystone grading to green shale.
557-6	Interbedded siltstone and fine grained sandstone.
562-10	Dense light grey shale grading to light grey fragmental flint clay
582-0	Dark grey silty claystone Plant rootlets at top.
586-0	Fine grained sandstone.
	Bottomed at 586-0

Hole #37 CB	
24 - 0	Surficial material
25 - 0	Medium grained sandstone.
27 - 8	Green silty claystone
34 - 10	Black clay shale interbedded with siltstone.
35 - 4	Bone
39 - 6	Argillaceous limestone
46 - 2	Silty claystone, limey lenses and pellets
56 - 7	Core loss
77 - 0	Silty clay shale.
79 - 1	Coal LOWER BAKERSTOWN
92 - 9	Silty grey claystone and clay
98 - 2	Grey silty claystone, limey pellets and stringers.
103 - 2	Grey silty claystone
122 - 7	Greyish green and red claystone and clay.
127 - 3	Shaley interbedded siltstone and silty claystone
128 - 7	Fine grained sandstone
134 - 10	Green and
144 - 0	Shaley silty claystone
145 - 5	Grey clay shale, scattered black clay lumps MARINE Fossils
150 - 4	Limey claystone
157 - 0	Green silty claystone Limey stringers

189-5	Interbedded siltstone and fine grained.
214-2	Black shale Marine Fossils. BRUSH CREEK
215-3	Coal
228-6	Grey claystone, limey pellets.
235-1	Interbedded siltstone and fine grained sandstone
235-6	Carbonaceous shale.
248-4	Grey grading to green silty claystone.
254-3	Fragmental green claystone, siltstone matrix
283-4	Green silty claystone, red mottling in upper part.
290-9	Interbedded siltstone and sandstone
291-3	Medium grained sandstone
307-4	Interbedded siltstone and fine grained sandstone.
308-4	Carbonaceous shale
309-0	Coal and bone
315-0	Silty claystone
32[illegible]-0	Black shaley claystone, locally carbonaceous, Coaly partings
329-9	Shaley interbedded siltstone and fine grained sandstone
332-11	Black grading to carbonaceous shale

336-1	Coal UPPER FREEPORT
339-0	Silty grey claystone.
349-11	Interbedded siltstone and fine grained sandstone. Flint clay fragments in lower part.
352-11	Fragmental tan flint clay siltstone matrix. Lith at bottom.
354-10	Brown claystone.
355-10	Fragmental brown flint clay Siltstone matrix
379-6	Grey siltstone; locally shaley
380-6	Dark grey claystone
382-1	Coal, bone and shale
389-0	Grey silty claystone grading to siltstone.
395-4	Interbedded siltstone and fine grained sandstone.
411-8	Coarse to conglomeritic sandstone.
413-10	Coal
416-5	Grey claystone, shaley in upper part.
	Bottomed at 416' 5"

Hole 38 CB

0 to 8	Unconsolidated
29-3	Medium grained cross laminated sandstone
32-3	Coarse to conglomeratic sandstone
34	Gray siltstone
40-5	Coarse to conglomeratic sandstone
42	Interbedded siltstone and sandstone
45-6	Conglomeratic sandstone
67-5	Black shale with marine fossils
68-7	Coal
88-6	Gray to green claystone limestone pellets
100-7	Interbedded silty claystone and sandstone
106-11	Fine grained sandstone
111-7	Green claystone, limestone inclusions
129-6	Green shaley claystone, silty zones.
135-5	Fine grained sandstone, zones siltstone
144-9	Gray to black shale, sandy at top
148-4	Coal
153-7	Gray semiplastic clay
164-11	Clay and claystone, limestone inclusions
174-3	Silty claystone grading to silty shale
185-10	Gray to black pyritic shale.
188-2	Coal
195-6	Gray semiplastic clay, limestone pellets
202-8	Siltstone and fine grained sandstone
209-5	Silty shale and claystone, limey pellets
222-5	Mottled red, green and gray clay + claystone.
237-5	Interbedded siltstone and sandstone
246-10	Gray silty shale
247-4	Limestone, marine fossils (Pine Creek)
248-10	Dark gray shale
257	Gray claystone limey pellets
279-7	Argillaceous sandstone
255	Sandy shale
312-9	Black shale, marine fossils
313-7	Coal
317-4	Fine grained calcareous sandstone
324	Gray clay, limey stringers and pellets

336-8	Fine grained sandstone
351-5	Green shaly claystone
354-3	Fragmental claystone
365	Mottled gray green and red claystone
378-8	Green claystone, limey inclusions
396	Interbedded sandy shale and sandstone
398-6	Sandstone
403-4	Gray claystone.
412-9	Dark gray shale
422-2	Interbedded dark shale and sandstone
426-1	Coal
429-7	Gray claystone, limestone pellets
431-4	Fragmental semi-flint clay, limey.
436-2	Fine grained argillaceous sandstone
445-3	Shaley claystone
447-3	Argillaceous sandstone
454-9	Silty claystone and siltstone
466	Siltstone with zones sandstone
480	Fine grained sandstone
510	Medium grained sandstone
526-3	Coarse to conglomeratic sandstone
529-8	Coal
539	Dark to light gray semiplastic clay.
549-4	Argillaceous sandstone
557-7	Gray sandy shale
573-11	Interbedded dark shale and sandstone
575-7	Coal
581-6	Argillaceous sandstone
585	Dark gray sandy shale
586-5	Coal
592-5	Interbedded siltstone and fine sandstone
599	Interlaminated sandstone and shale
601-4	Coal
603-3	Fragmental flint clay
605-6	Interbedded siltstone and sandstone
613-2	Gray to black shale
616-2	Coal

618	Sandy carb. shale, coaly streaks
618-8	Sandstone, coaly partings
620-6	Sandy shale, thin seams coal.
621-9	Sandstone, coaly partings
622-10	Sandy black claystone
623-6	Conglomerate
624-8	Black shale
625	Shaley bone
628-8	Silty claystone, and siltstone
633	Fine-grained quartzitic, stylolitic sandstone.

T.D. 633

Hole 39 CB

0 – 12	Overburden
31	Fine to medium-grained sandstone
48	Clay and claystone, limey pellets
56-2	Argillaceous siltstone
69	Interbedded siltstone and fine sandstone
94-6	Medium-grained sandstone
95-3	Dark gray shale, plant fossils
96 7	Coarse grained sandstone
99-3	Dark gray shale, plant fossils
115-5	Silty clay with limestone pellets
121	Interbedded silty claystone and siltstone, limey stringers
123-4	Shaly siltstone grading to sandstone
125-8	Coaly claystone, pyrite nodules
150-1	Dark gray to carbonaceous shale, plant remains
151-5	Coal
166	Gray clay and claystone, limestone pellets
168-1	Limestone
173-8	Claystone, limestone pellets and stringers
190-9	Silty claystone, irony stringers in middle part.
203-0	Interbedded siltstone and fine sandstone
219-5	Interbedded black shale and sandstone
250-4	Medium and fine grained sandstone
260	Irregularly interbedded siltstone and silty claystone
264-8	Dense siltstone
272-10	Black shale, marine fossils
274-9	Coal
275-10	Carbonaceous silty claystone
300-4	Gray claystone limestone pellets, some beds limestone upper part.
306-9	Mottled green and gray claystone irony stringers
321-4	Gray claystone limestone pellets
329-6	Gray siltstone limestone inclusions
340-6	Interbedded shaly siltstone and sandstone
355	Silty claystone and siltstone, limestone inclusions.

360	Dark gray to carbonaceous silty claystone, pyrite pellets
375-6	Claystone, limey and pyritic, bed limestone at top.
383	Light gray silty shale, sandy in lower part
393-6	Black shale, silty in upper half
395-7	Coal
402	Gray plastic clay, zone limestone inclusions in middle part
422-5	Interbedded silty shale and siltstone
437-2	Mottled red and gray plastic clay
461	Interbedded shaly siltstone and fine sandstone
461-6	Gray shale marine fossils
468-4	Mottled red and gray plastic clay limestone pellets and inclusions.
483-6	Gray siltstone, sandy in lower part.
498-4	Medium-grained sandstone
506	Gray siltstone
520	Silty shale and siltstone
538-11	Dark gray to black shale, marine fossils.
540-7	Coal
542	Gray plastic clay
560-9	Gray clay and claystone, limestone inclusions
565-2	Siltstone, sandy in lower half
575-8	Gray plastic clay, irony stringers.
580	Light greengray claystone, limey inclusions
595-1	Gray and green clay, beds of ironstone.
606-8	Green to gray siltstone
609-8	Interbedded sandstone and siltstone, sandstone in lower third.
611-4	Gray shale
619-6	Interbedded siltstone and sandstone
624-3	Black shale
624-10	Coaly bone
630	Gray silty clay
652-5	Interbedded siltstone and sandstone
654-3	Dark gray to carbonaceous shale
657-8	Coal
658-4	Dark gray claystone

663-3	Argillaceous limestone
667	Semiplastic and semihard clay, silty & sandy
671	Gray argillaceous siltstone
680-6	Interbedded siltstone and fine sandstone
682-5	Fragmental siltstone and silty claystone
699-4	Gray siltstone, zones of ironstone
713-2	Interbedded siltstone and fine sandstone
714-2	Dark gray to carbonaceous shale
714-9	Coaly claystone
717-2	Claystone, fragmental zones, some limestone inclusions in lower part
719-1	Semiplastic and fragmental semiflint clay, some limey inclusions
721	Siltstone with zones ironstone
724-1	Interbedded siltstone and sandstone
729-9	Gray to black shale silty streaks
732-4	Coal
735	Argillaceous limestone

T.D. 735

HOLE #40

CB	
36 - 6	Surficial material
37 - 0	Medium grained sandstone
47 - 1	Black clay shale
48 - 10	COAL
54 - 5	Grey, silty, semi-plastic clay
71 - 2	Green silty, shaley claystone
84 - 0	Grey and red claystone and clay
106 - 2	Greenish siltstone interbedded with fine-grained sandstone
113 - 8	Grey silty clay shale
115 - 4	Black clay shale, 4" siderite nodule on top MARINE FOSSILS
131 - 0	Soft green claystone, limey pellets
140 - 3	Interbedded siltstone and fine grained sandstone
151 - 3	Shaley interbedded silty claystone and siltstone
156 - 6	Interbedded black siltstone and fine grained sandstone - PLANT FOSSILS
176 - 9	Black clay shale - MARINE FOSSILS
177 - 10	COAL
184 - 5	Grey silty claystone
196 - 0	Light grey soft clay, limey pellets in upper part
202 - 3	Grey siltstone
208 - 3	Green claystone, shaley in upper part
214 - 3	Fragmental green claystone, semi-flint clay
216 - 8	Interbedded green siltstone and fine-grained sandstone
218 - 2	Fragmental green claystone, semi-flint clay, limey stringers

HOLE #40
C.B.

233-10	Green and red claystone
235-2	Fragmental green claystone and tan semi-flint clay
241-6	Green silty grey shalestone
260-9	Interbedded siltstone and fine-grained sandstone
264-8	Black clay shale
269-2	Grey claystone
280-6	Shaley interbedded black siltstone and fine-grained sandstone - PLANT FOSSILS
285-6	Black silty clay shale
287-10	COAL
288-7	Grey claystone
290-3	Fragmental, tan flint-clay, and black claystone. (Lith)
292-7	Fragmental green claystone, limoy stringers
303-5	Grey and green claystone
309-8	Green interbedded siltstone and fine-grained sandstone
314-2	Green silty shaley claystone
321-5	Green interbedded siltstone and fine-grained sandstone
336-4	Green silty claystone, sandy streaks
338-5	Grey, grading to black claystone
338-11	Carbonaceous shale and bone.
363-4	Interbedded siltstone and fine-grained sandstone
381-7	Coarse-grained stylolitic sandstone, locally conglomerate
385-0	Interbedded siltstone and fine grained sandstone
391-11	Shaley claystone
397-10	Medium-grained sandstone

HOLE #40

C.B.

406-4	Interbedded siltstone and fine-grained sandstone
408-7	COAL
418-10	Dark grey siltstone
423-0	Interbedded siltstone and fine-grained sandstone
423-10	COAL
427-10	Dark-grey silty claystone - PLANT ROOTLETS
431-5	Interbedded siltstone and fine-grained sandstone - PLANT FOSSILS
437-2	Medium-grained sandstone
438-0	COAL
440-2	Grey, silty, semi-plastic clay
440-2	Irregularly interbedded siltstone and fine-grained sandstone
451-8	Grey clay shale
453-2	Brownish-grey, semi-plastic clay
453-8	Carb. shale and bone
454-2	Black silty claystone - PLANT ROOTLETS
459-11	Irregularly interbedded siltstone and fine-grained sandstone
461-9	COAL
463-8	Brownish silty claystone - PLANT ROOTLETS

Bottomed at 463-8

K.M. Waage